

• THE •
TRADE & INDUSTRY
• OF •
AUSTRALASIA

Ben. H. Morgan.



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THE
Trade and Industry
OF
Australasia :

Being a Report on the State of and
Openings for Trade, and the Condition of
Local Industries, in Australia and
New Zealand.

BY
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PREFACE.

IT is a pleasant though arduous task to report on the condition and prospects of trade in Australia and New Zealand, when those countries are not only themselves in a flourishing condition, but when their industrial future is so full of promise as at the present time. There is solid prosperity in both countries. Exports and imports are increasing; local industries are steadily growing; and the high character of the products and the excellent work turned out of the factories are all evidences of the existence of a high standard of labour. Then I found practically no unemployed, and a social and intellectual condition prevailing amongst the working classes that was quite refreshing after a close acquaintance with the evils that exist in our own country, largely through congestion and unrestricted competition.

In February last I was instructed by the Manufacturers' Association of Great Britain to report on—

The extent and possibilities of the market, with a view to—

- (a) Increasing export trade.
- (b) Establishing branch factories inside the tariffs.

The extent and condition of local industries.

The nature and condition of foreign competition.

Transport services, with special reference to shipping "rings" and "conferences."

The operation of local tariffs and effects of preferences.

This volume records in a brief space some of the principal items of information collected, and my personal views on questions cognate to trade with these markets—views which, I need scarcely add, the Manufacturers' Association, as a body, are not responsible for.

I was also requested to make representations to the Australian Government with a view to securing modifications in certain items in the tariff then under discussion in the Commonwealth Parliament and to removing certain restrictions to Empire trade which at present exist.

My representations were well received, and as a result substantial reductions on many items and increased preferences on others were obtained, lists of which have already been widely published in the Press. I was informed that still further advantages might have been secured had my visit been made a few months earlier, as a number of items that might have been modified in favour of British manufacturers had already received the approval of both Houses of Parliament.

I recognised at the outset that the task before me was a very difficult one to accomplish in a short time, but I have always held the opinion that trade reports, to be of value, must be issued promptly, and contain information of current interest, in addition to recording the course of trade as closely up to the time of their publication as available statistics allow. Although the questions so hurriedly dealt with are of vast importance and more or less complex in character, it is possible that one who has possessed the confidence, in his enquiries, of the leading statesmen in the various colonies, the largest importing and distributing houses, the Chambers of Commerce and Manufactures, and other public bodies, may, by a careful discretion, give a useful estimate of the financial, industrial, and commercial

situation of the country in a comparatively short period. On the other hand, nothing is easier than to be led away by interested views, or indeed, without such temptation, to fall into errors of judgment in dealing with the many matters of a complex nature, such as one meets with in a review of a colony's trade. For these reasons I do not hesitate to throw myself on the generosity of my readers for the many imperfections which the volume may contain.

I sailed for Australia in February of this year and returned to England towards the end of July, having visited the principal centres of industrial activity in the Commonwealth and the Dominion. I was accompanied throughout by my wife, whose assistance has been of the greatest value to me.

I must express my great indebtedness to the various members of the Commonwealth and State Governments for the sympathetic way in which my mission was regarded, and the very substantial assistance which they gave me. This was due in the first instance to the courtesy of Captain R. Muirhead Collins, R.N., C.M.G. (representing the Commonwealth Government in London), and the Agents General of the Australian States, as well as the High Commissioner for New Zealand for commending me to their respective Governments. The Hon. Alfred Deakin, the late Prime Minister of the Commonwealth, was extremely interested, and placed much valuable time at my disposal, as did also Sir William Lyne, K.C.M.G., the Hon. Austin Chapman, the Hon. Samuel Mauger, Dr. H. P. Wollaston, and Mr. Robert Scott, I.S.O. ; while Mr. G. H. Knibbs, F.S.S., the Commonwealth Statistician, supplied the greater portion of the figures relating to Australian trade given in this report. The Hon. Andrew Fisher, the present Prime Minister of the Commonwealth, the Hon. J. C. Watson,

and other members of the Labour Party, were also sympathetic with the Mission, and gave me much information concerning labour legislation and conditions. The State Premiers and other members of the State Governments, including Sir Thomas Bent, the Hon. J. Kidston, the Hon. Newton J. Moore, the Hon. Charles Lee, the Hon. T. Waddell, the Hon. L. O'Loughlin, and the Hon. A. H. Peake, and the Chambers of Commerce, of Manufactures, and of Mines, also received me most hospitably; the cities and town councils also rendered me great assistance, while I found the leading importing and distributing houses willing to give every possible information with a view to increasing British trade. I was also cordially received by the Hon. Sir Joseph Ward, P.C., K.C.M.G., Premier of New Zealand, and by members of his Government, who facilitated my investigations in every way. Again, I was similarly assisted by the Chambers of Commerce and the leading business houses in that colony. Throughout the Commonwealth and the Dominion there was shown an unmistakable desire—indeed, I might even say eagerness—to improve the trade relations with the Mother-country.

In discussing matters pertaining to my mission with Ministers and officials of the various colonies, I was much impressed at finding Imperial trade relations in a state of profound involution. If this report, besides giving the British manufacturer some practical information on Australian and New Zealand trade, helps to call attention to the foregoing serious condition of things, it will serve a useful purpose

BEN. H. MORGAN.

QUEEN ANNE'S CHAMBERS,
WESTMINSTER, S.W.

December, 1908.

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REPORT

ON THE

TRADE AND INDUSTRY

OF

AUSTRALASIA.

Imperial Trade Relations.

IN a review of the trade of any colony, it is first of all essential to examine the relations that exist between the people of that portion of the Empire and the Mother-Country, for the condition of trade and finance is always to a large extent dependent upon the general feeling of security and progress which is born of wise and sympathetic government. I therefore venture a few words at the outset of this Report on the present Imperial attitude towards the self-governing and Crown Colonies which I have visited as viewed from a trade standpoint.

The
Imperialism
of Trade.

In reply to any criticism one may make on existing relations, however, one is met by the statement that Great Britain continues to be the greatest buyer and seller in the Australasian market. This is true, and there should be nothing remarkable in our continuing to hold the largest share of the trade. The present generation has practically inherited the "goodwill" of the whole business—a business which was established before our present competitors engaged in export trade at all. Then there is a national allegiance displayed by colonial customers for British products, a sentiment to which we owe a great deal in commerce. Not only are the principal importers in Australia and New Zealand of our own blood, but the actual consumers themselves are British subjects. In these circumstances, the more important question is, why are

Value of
Sentiment.

we not increasing our hold on the market ? There are very serious reasons, and they concern, not only business methods, the character and prices of goods, and freight conditions, but also a changing sentiment towards the Mother-Country, not in any degree deficient in loyalty to the Empire, but evident of dissatisfaction with our methods of treating their Imperial and trade proposals.

Imperial
Connection
deficient.

As a result of enquiry and investigation in the principal States of the Commonwealth and in New Zealand, and of discussing cognate problems with the principal men of affairs in those colonies, one consideration stands out prominently on the face of the situation as needing enquiry and solution, namely, the inadequacy and inefficiency of the present Imperial connection as it affects trade.

Unsympa-
thetic
Relations.

The relations between the Mother-Country and the Colonies are, without any doubt, decidedly unsympathetic. This condition of things has been reached in my opinion through no lack of patriotism, but owing to the persistent use by the British Government of antiquated machinery and the adherence to obsolete principles in the administration of Colonial affairs, and the general control of trade at home. "Interference" rather than "co-operation" describes the attitude of the Colonial Office towards the Colonies. Feeling is especially strong in Australia and New Zealand in regard to Great Britain's neglect in taking advantage of opportunities to adjust fiscal matters, not only with the Colonies, but also with foreign countries. There is consequently a growing distrust of British statesmanship.

Neglect of
Fiscal
matters.

Reciprocity
discouraged.

As a leading Colonial statesman remarked to me : "It is no use making proposals at the present time to the British Government entailing any element of reciprocity. Our importance is erroneously judged by our relative population to that of the United Kingdom. Our greater purchasing capacity per head and our immense potentialities do not seem to count. The desire to make co-operative or mutually advantageous arrangements, we think, should prevail stronger at home than here in Australia. You have teeming millions, a

large proportion of whom are on the verge of poverty ; you have inadequate internal sources of supply of food and raw materials ; you are at your wits' end for revenue for current expenses ; and you have armed nations waiting their opportunities at your doors. While we depend on the British Navy for defence, we are isolated and removed outside the contentious area ; we have immense sources of food supplies and raw materials, a magnificent climate, and millions of acres of land waiting for the millions of people from your congested districts. You are trammelled by vested interests and traditions which keep you within somewhat narrow bounds, when dealing with internal as well as external affairs, while we have started out on broad lines in our dealings with other countries and at home with legislation which distributes wealth more fairly. One would think that under these conditions the overtures for reciprocity would come from the Mother-Country, that she would seek to make use of the opportunities for the settlement and placement of her people to the best advantage. But she has utterly failed to do this, and Australia and other self-governing Colonies are rapidly becoming entirely separate political entities, notwithstanding the desire to make the Commonwealth an integral and indispensable portion of the British Empire."

The Millions
and the Op-
portunities.

Statesman's
Conclusions.

Many of the best minds in the Commonwealth expressed similar views regarding the present Imperial connection.

I do not desire to dwell at any length on the purely political relations between the Mother-Country and the Colonies, and I have so far referred to the subject here only to show that, if in matters of such vital importance there is indifference on the part of the government of the day, what consideration can we hope for for the purely trade and shipping questions, which are in such a chaotic condition throughout the Empire. The shipping, copyright, trade marks and patent laws, emigration and a dozen other matters need co-ordination, and yet we make no overtures in these matters.

The Govern-
ment and
Trade.

Meanwhile Australia and New Zealand, with a prescience born of a larger view of Empire and a

Colonial
Statesman-
ship.

keener appreciation of modern world conditions than we appear to possess, give us a preference in their markets, noting that the time is not far distant when a reciprocal trade arrangement throughout the Empire must be made if dissolution is to be avoided, and with this in mind they, in common with other Colonies, are also building up preferential tariffs with other parts of the Empire. They have been approached by foreign nations to reciprocate in tariff concessions, while Canada, as we know, has actually proposed such a treaty with a foreign nation, which, if consummated, will not only immediately injure British trade interests but retard the Empire movement towards reciprocity—such is the view commonly expressed by Australasians.

Canadian-French
Tariff.

Why has Canada taken this step? The efforts she has made for some years past to induce Great Britain to make some permanent reciprocal trade arrangement, have proved so futile as to estrange a large body of public opinion in Canada that originally stood for trade within the Empire. As was pointed out to me by a representative of one of the Colonies, it was clear, at the last Colonial Conference, that Canada then did not propose to waste time in pressing for reciprocity. A few years ago no colonial statesman would have dared to have proposed a reciprocal tariff with a foreign country such as the Canadian-French proposal.

Scientific
Tariffs.

I have no concern with party politics, but one cannot help seeing that the matter of tariffs is absolutely neglected by our own Government. The self-governing Colonies have scientific tariffs which they can easily frame in favour of certain countries in return for advantages which will secure them wider markets for their products in those countries. They have appealed to the Mother-Country and, as a Premier has emphasised to me, if they cannot get advantages in the British market over and above those they now get, they will seek them in foreign countries, from which they have probably all received proposals.

Inter-Colonial
Tariffs.

As we know the self-governing Colonies do not hesitate to make reciprocal arrangements amongst themselves; to them the proceeding is a perfectly

natural and businesslike one, and in principle almost elementary. Some Colonies would like to extend the principle to the Crown Colonies ; indeed one has already made such a proposal. But naturally the present policy of the Imperial Government prevented any progress in that direction.

And here I will touch for a moment on a matter of very great importance, namely the relations between the Crown Colonies and the self-governing Colonies. Anyone who has had experience of Crown Colonies realises that anything in the nature of self-government is impossible for these countries, populated as they are chiefly by native races ; indeed, it is doubtful whether a better system of government than the present one could be evolved if sustained by officials properly trained and adequately paid. But what is badly needed in the interests of trade is, that the Governors and Legislative Councils of these Territories should be given larger powers to carry out local industrial reforms, to develop the country under their administration to the best of their ability, and to make such arrangements with local Crown or self-governing Colonies, as would encourage a maximum exchange of commodities. I found in the Crown Colonies which I visited, that they were capable of considerable industrial development, but were hampered through a policy which reserved the lands for the native population, without any compulsion to improve or develop, and which gave no discretion into the hands of the local executive to make tariff concessions to self-governing or Crown Colonies.

I had many conversations with colonial statesmen on this subject, and they all expressed the utmost astonishment that such a meaningless and vacuous trade policy should have so long existed towards these fertile Crown Colony territories, not only capable of supplying practically all the raw materials that we require for our industries throughout the Empire, but of ultimately becoming the most valuable markets for our surplus manufactured products, when other countries become self-supporting, which is every year nearing realization.

The Crown
and Self-
Governing
Colonies.

A Vacuous
Trade
Policy.

Importance
of Crown
Colonies.

I am one of those who regard the Crown Colonies as the more valuable portion of the British Empire from a trade standpoint. The time is not very far distant when the greatest exchange of products will take place between the tropical and the temperate zones. This trade will be more permanent than any other, since climatic conditions will prevent the production in the warmer countries of such articles as we are now producing in Great Britain and the self-governing Colonies.

State Interest
in Trade.

I have just touched on this subject with the object of showing that a similar condition of inaction and drift prevails in the Crown Colonies as is displayed towards the self-governing portions of the Empire, and that I might again urge that the time is long overdue when we, as a nation, should take up the regulation, the development, and the defence of trade in an energetic and intelligent manner.

Shipping
"Rings."

If there is need of closer and more sympathetic working relations between Great Britain and her Colonies, there is also as pressing a need for the State to control and regulate in some measure the transport and cable services upon which our export trade depends. There was probably no subject more widely discussed and more bitterly complained of than the continued oppression of the London-Australian and London-New Zealand shipping "rings" or "conferences." I have dealt with the matter in a separate section of this report. The British Government are subsidising many of the vessels in these "rings" by giving mail contracts. A vigilant government, watchful of the interests of trade would have exercised the power which they possessed to ensure that the interests of the manufacturer and trader were properly safeguarded.

The Australasian Market.

AT the outset of a Report of this nature it is necessary that the extent and character of the market under investigation and consideration should be adequately realised and that the importance of the interests involved should be properly appreciated. There are probably few markets of greater present and prospective value to the British manufacturer than those of Australasia. The reason of this, as will be shown, is as much on account of the peculiar nature of the trade done as the enormous absorbing and producing capacity.

Importance
of the
Market.

Australasia consists essentially of New South Wales, Victoria, South Australia, Queensland, West Australia, the North Territory, Tasmania, and New Zealand, the whole covering an area of 3,079,340 square miles, or 25 times as large as the United Kingdom, Hungary, Norway, Austria, or Italy, greater than the United States, and nearly equal to three-fourths of the whole area of Europe, including Russia; in relation to the whole British Empire it occupies one-fourth of the total area.

Area.

Its population, however, does not equal that of London and suburbs, the whole numbering a little over five and a quarter million people. With favourable climatic conditions, large stores of mineral wealth, and exceedingly fertile soil, there are all the elements present necessary to sustain a population possibly fifty times its present number. As a prospective market, therefore, Australasia is extremely valuable.

Population.

In 1907 this market purchased goods from overseas countries to the value of no less than £67,111,894, and exported foodstuffs, raw materials, and manufactured goods to the value of £90,607,385. To give a more intimate idea of the import and export trade of this market, I propose to treat of the volume and character of that of the Commonwealth of Australia and the Dominion of New Zealand separately.

Overseas
Trade.

Countries
Prosperous.

From whatever standpoint one may examine the exports and imports of the Commonwealth and Dominion, it would be difficult to arrive at any other conclusion than that these countries are, at the present moment, in a very prosperous condition. The excess of exports over imports are not only sufficient to meet current liabilities in respect to borrowed capital, for both Government and private enterprises, and pay the large freight bill, but to leave a handsome surplus. The character and volume of the exports—chiefly the products of primary industries—are significant of the existence in Australasia of a large and well-equipped farming population. It is true that high prices have ruled for the past few years, and climatic conditions have been, on the whole, favourable, but, after all allowances have been made in respect to these points, the evidence indicates a sound condition, and promises a prosperous immediate future for these countries.

The figures given in the following table will show at a glance the favourable financial position of Australasia as judged by ordinary standards :—

OVERSEAS TRADE OF AUSTRALASIA.

Year.	Total Trade.	Imports.	Exports.	Excess of Imports.	Excess of Exports.
	£	£	£	£	£
1885	72,220,444	41,136,038	31,084,406	10,051,632	—
1890	75,143,818	38,451,160	36,692,658	1,758,502	—
1895	67,624,317	27,425,725	40,198,592	—	12,772,867
1900	104,298,717	48,351,933	55,946,784	—	7,594,851
1905	119,561,882	49,359,871	70,202,011	—	20,842,140
1907*	157,719,279	67,111,894	90,607,385	—	23,495,491

* Approximate.

Great Bri-
tain's Third
Market.

Australasia at the present time ranks third in importance as a market for British goods, and those who are disposed to judge of its importance by the number of its population should remember that the five and a

quarter millions who inhabit this part of the Empire, purchase goods to considerably over half the value of British India with its three hundred million inhabitants.

It is to be regretted that the statistics relating to the import trade of Australasia are not sufficiently clear to allow of a definite estimate being made therefrom of the proportion of foreign goods purchased as compared with British. In this they are no worse than our own official figures and those of other parts of the Empire ; indeed, the Commonwealth statistics are, if anything, the most lucid of any : but there is still confusion between the "country of origin" and "country of shipment," which makes it impossible to form more than a rough estimate from the figures themselves of the actual state of competition. New Zealand does not attempt in her statement of imports to separate the two, but the Commonwealth in 1905 and since then have done so to a limited extent. In addition to keeping a record of the countries whence goods are imported the Customs Department now record also, so far as they can, the "country of origin."

Statistics and
Foreign
Competition.

It will come as a shock to many people to find that a large quantity of foreign goods have been exported to this market which have generally been regarded as British. As the table on page 10 will show, the volume of exports of foreign goods from the United Kingdom to Australia is quite considerable, and illustrates how important it is that we should distinguish closely between "country of shipment" and "country of origin" in forming an estimate of the state of foreign competition.

Foreign
Trade larger
than re-
corded.

It will be seen from the following table that the United Kingdom is the only country that to any extent has distributed the goods of other nations, but my enquiries show that even a larger proportion of our exports to Australia are of foreign origin than the table named indicates ; and in regard to New Zealand's statistics the proportion is still much greater. Some reasons for this condition of things are given in the sections dealing with foreign competition and the shipping question. The table also shows that instead of our proportion of the total import trade in 1905 being

British Trade
over-
estimated.

Country.	Imports according to							
	Country of Shipment.				Country of Origin.			
	1905.		1906.		1905.		1906.	
	Value.	Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Per cent.
United Kingdom - - - - -	£ 23,074,717	60·17	£ 26,575,833	59·42	£ 20,319,815	52·99	£ 22,904,344	51·21
British Possessions - - - - -	5,384,150	14·04	6,735,864	15·06	5,204,987	13·57	6,469,409	14·46
Total British Countries - - - - -	28,458,867	74·21	33,311,697	74·48	25,524,802	66·56	29,373,753	65·67
FOREIGN COUNTRIES—								
Austria - - - - -	11,333	0·03	8,828	0·02	81,553	0·21	109,014	0·24
Belgium - - - - -	551,984	1·44	909,620	2·03	252,329	0·66	446,251	1·00
China - - - - -	69,349	0·18	58,338	0·13	318,701	0·83	271,295	0·61
France - - - - -	510,950	1·33	462,622	1·03	1,343,753	3·50	1,473,367	3·29
Germany - - - - -	2,643,412	6·89	3,204,844	7·17	3,026,850	7·89	3,929,116	8·78
Japan - - - - -	371,761	0·97	422,552	0·94	397,321	1·04	450,893	1·01
Netherlands - - - - -	132,327	0·35	151,638	0·34	244,255	0·64	228,896	0·51
Norway and Sweden - - - - -	302,397	0·79	359,588	0·80	524,694	1·37	619,743	1·39
Spain - - - - -	15,738	0·04	21,568	0·05	82,627	0·22	104,827	0·23
Switzerland - - - - -	22,826	0·06	27,085	0·06	389,294	1·02	474,804	1·06
United States - - - - -	4,486,604	11·70	4,633,553	10·36	5,005,387	13·05	5,605,612	12·54
Other Foreign Countries - - - - -	769,183	2·01	1,157,573	2·59	1,155,165	3·01	1,641,935	3·67
Total Foreign Countries - - - - -	9,887,864	25·79	11,417,809	25·52	12,821,929	33·44	15,355,753	34·33
Total Imports from all Countries - - - - -	38,346,731	100	44,729,506	100	38,346,731	100	44,729,506	100

over 60 per cent., as our own Board of Trade records show, it was less than 53 per cent., and, in 1906, instead of over 59 per cent., it was under 52, and, in my opinion, a much longer way under than can be discovered from any official figures.

I need not dwell further here on the well-known confusion between "country of origin" and "country of shipment," as it has been very fully discussed in the excellent reviews on Australian trade by Mr. T. A. Coghlan and Mr. R. J. Jeffray; but I would like to make it clear that while I deal throughout this report with official statistics, I am of opinion, as the result of my investigations, that they do not more than approximately show the position of affairs in regard to foreign competition in this market.

Before leaving this subject I would like to submit that the proper collection and compilation of Empire statistics is a matter demanding urgent attention. The methods of compiling records at present vary in nearly every Colony, which in turn vary with our own practice at home. This state of things enormously decreases the value of Empire statistics, for while serving the purposes, more or less, of the respective parts, they are of little value for comparative purposes or for indicating the condition of the Empire as a whole. It should not be difficult to co-ordinate the statistics of the various parts in such a way as to give them co-relative values. Such a consummation would be of immense value in the government and development of trade and industry of the Empire.

Empire
Statistical
Reform
needed.

In a comparatively small way the matter has been accomplished by the Commonwealth of Australia, under the guidance of Mr. G. H. Knibbs, F.S.S. Previously each of the six States had its own methods of compiling records, and the Commonwealth found it impossible to estimate the condition of Australia as a whole from figures which were not prepared in a uniform manner. If uniformity was so necessary to the Commonwealth Government, how much more so is it to the Imperial Government, with its enormous liabilities in regard to defence and emigration, and its immense interests in trade and shipping. Without

The
Common-
wealth
Example.

figures available that will show the conditions of population, wealth, trade, industry and shipping, how is it possible to evolve legislative measures and administrative rules and regulations of the greatest benefit to the Empire as a whole?

Commission suggested.

Why should not a commission of Empire statisticians and economists be called together to discuss and plan a uniform system of collecting and compiling statistical information? I believe that such a commission would meet no insuperable difficulty, and there is little doubt that a common scheme would tend to the better government, development, and defence of the Empire.

Australian Export Trade.

Influence of Exports.

To understand the influences which affect the growth of foreign trade in the Australian market, it is necessary to discover in what relation foreign nations stand to the Commonwealth as buyers of the latter's products, and so I propose to deal very shortly with the export side of Australia's trade.

Exports in 1907.

In the following Table are given the exports from the various States of the Commonwealth for 1907:—

AUSTRALIA'S EXPORTS FOR 1907, SHOWING STATES OF SHIPMENTS AND PURCHASING MARKETS.

From	To			Total.
	United Kingdom.	British Possessions.	Foreign Countries.	
New South Wales	£ 13,687,978	£ 4,255,611	£ 14,950,484	£ 32,894,073
Victoria - -	8,514,274	2,939,327	5,658,697	17,112,298
Queensland - -	3,197,977	575,372	1,996,039	5,769,388
South Australia -	3,762,828	1,369,618	2,838,101	7,970,547
Western Australia	4,454,764	3,919,105	204,571	8,578,440
Tasmania - -	357,758	64,245	77,498	499,501
Totals -	33,975,579	13,123,278	25,725,390	72,824,247

It will be seen that of the total exports amounting in value to £72,824,247, foreign countries purchased to the value of £25,725,390, and that with the British Possessions' share the Commonwealth now have customers for their goods outside of the United Kingdom to the value of £38,848,668, which is some £5,000,000 in excess of our own purchases. As I shall presently show, foreign markets are becoming increasingly valuable to Australia, while that of Great Britain is correspondingly decreasing. Here we have a factor in our Australian trade connection, the importance of which it would be dangerous to undervalue.

Relative
Purchases.

Australia's exports are chiefly the product of agricultural, pastoral, and mining industries, but there is promise of Australia exporting a substantial quantity of manufactured articles to the Eastern and the numerous island markets in close proximity in a few years' time, and also to those countries which produce similar foodstuffs and raw materials, for the raising and handling of which Australia has evolved and now manufactures special machinery and goods. The trend in this direction is seen in the 1906 returns, which show that Australia exported to the Argentine Republic, where similar conditions prevail in certain industries, £31,847 worth of Australian-made agricultural implements and machinery, while evidences of the beginnings of export trade in manufactured goods might be seen in the shipments to New Zealand, New Guinea, Straits Settlements, and the Pacific Islands. The new tariff will encourage the development of this feature of the export trade, though until the Far Eastern markets are reached it must be somewhat limited.

Character
of Exports.

Glancing at the exports as a whole, we find that in 1906 Great Britain absorbed foodstuffs and raw materials to the value of £32,854,049, and British Possessions £13,850,912, while foreign countries purchased no less a quantity than £23,032,802. As will be seen from the Table on the preceding page, in 1907 foreign purchases increased to £25,725,390.

1906
Exports
compared.

It is a disquieting feature, not only in regard to Australian trade, but to that of many of the other British Colonies, that Germany, France, Belgium, and

Foreign and
British
Purchases
compared.

the United States are absorbing, year after year, increasing quantities of raw products. In 1896 such exports from Australia to the United Kingdom were 69 per cent. of the whole, while in 1906 they had fallen to 47 per cent. The shipments to foreign countries in corresponding years were 21 and 33 per cent. respectively.

Influences
affecting
Purchases.

This increase in the one case and decrease in the other are probably due to direct shipping services and low freight rates, and growing home industries on the one hand, and high shipping rates and languishing industries on the other hand. Excluding bullion and specie, the greater part of the purchases of Great Britain consist of foodstuffs, while those of the United States, France, Germany and Italy are almost entirely raw materials.

For instance, in 1906, in four items alone, foreign markets purchased raw materials from Australia to the value of £14,316,829, as the following Table will show :—

Materials.	Germany.	United States.	France.	Belgium.	Italy.
Copper -	£ 125,426	£ 545,940	£ 112,853	£ 219,750	£ 22,314
Tin - -	103,980	87,172	26,329	86,552	—
Skins and Hides.	53,600	313,318	678,945	269,550	46,052
Wool -	2,962,586	912,679	4,577,034	3,113,778	58,971
Total -	3,245,592	1,859,109	5,395,161	3,689,630	127,337

The Imperial
Aspect.

If the industrial aspect of the case is unsatisfactory, what can be said of the Imperial view? Australia is finding that year after year European and American markets are becoming increasingly valuable, while the British market, though at present preponderating, is a declining quantity. Here we have a weakening of the strongest bond which exists between Australia and the Mother-Country—the bond of trade. The more raw materials that foreign countries absorb, the more dependent Australia must become upon these countries. Goods which Great Britain purchases from Australia



SHEARING BY MACHINERY IN NEW SOUTH WALES.



A GREAT WOOL STORE, PORT ADELAIDE.

TWO SNAPSHOTS OF THE GREAT WOOL INDUSTRY.

in the largest quantities, namely, foodstuffs, are largely those which she is compelled by necessity to purchase, and consequently there does not attach to our custom the proportionate value in goodwill that attaches to the custom of foreign countries.

I have had this matter of the increasing value of foreign markets pointed out to me on several occasions by Australian statesmen, and there is no doubt that the influence of foreign nations will make itself felt in any commercial arrangements with the colonies in approximately that proportion to which they become customers for their products.

Australian Import Trade.

THE table on page 16 shows the import of each State of the Commonwealth for 1907 as compared with 1906, and it also gives an indication of the local movements of trade for those years.

It will be seen that the total value of the imports, for 1907, including bullion and specie, amounts to £51,809,033. The increase of over £7,000,000 on the trade of the previous year must, however, not be attributed wholly to enhanced purchasing capacity of the market, for a good deal of the buying, as I found from inquiries in Australia, was in anticipation of the higher tariff. There is no doubt, however, that, under normal conditions, the year's imports would have shown an increase on the previous one.

The imports for the six months ending June 1908 amount to £23,844,651 as compared with £23,947,747 for the corresponding period of the previous year.

While the first portion of the table below, indicating the countries of shipment and the States of destination, is of the greater importance to the British manufacturer, the balance of the table is useful to indicate the local courses of trade and where the principal centres of activity lie. It must not be inferred, however, that the States actually consume the quantities of goods credited to them, as there is always a large movement

Imports,
1906-7.

Increase on
Previous
Year.

Imports to
June 1908.

Local Trade
Movement.

of trade of which no record can be kept, besides a volume of re-export business.

TABLE SHOWING THE GROSS IMPORTS OF EACH STATE OF THE COMMONWEALTH, FROM OVERSEAS COUNTRIES DIRECT AND FROM OTHER STATES OF THE COMMONWEALTH during the YEAR 1907, with TOTALS also for 1906.

From—	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Total.
Oversea Countries—							
United Kingdom -	£ 12,474,736	£ 10,297,973	£ 3,196,111	£ 3,000,416	£ 2,267,411	£ 640,898	£ 31,937,545
British Possessions -	3,308,836	2,189,678	280,201	562,930	285,191	53,632	6,680,468
Foreign Countries -	5,076,819	4,613,371	1,141,127	1,192,113	1,934,946	132,644	13,191,020
Total Imports from { 1907 Oversea Countries { 1906	20,860,391 17,603,503	17,101,022 14,870,569	4,617,439 3,748,523	4,815,459 3,982,717	3,587,548 2,780,495	827,174 759,105	51,809,033 44,744,912
Inter-State Transfers from—							
New South Wales -	—	6,668,887	3,423,537	4,626,205	675,563	486,807	15,880,999
Victoria -	5,561,300	—	977,751	1,701,781	1,530,350	1,851,475	11,622,657
Queensland -	7,093,673	1,271,164	—	544,246	74,500	17,437	9,001,080
South Australia -	4,080,939	941,734	295,974	—	545,886	64,674	5,929,207
Western Australia -	528,955	337,963	10,988	370,986	—	626	1,249,518
Tasmania -	1,417,028	1,877,488	104,002	61,375	109,091	—	3,568,984
Total Inter-State { 1907 Transfers { 1906	18,681,895 17,061,859	11,097,236 10,379,139	4,812,252 4,562,939	7,304,593 5,719,547	2,935,450 3,040,438	2,421,019 2,271,409	47,252,445 43,035,331
Grand Total - { 1907 - { 1906	39,542,286 34,665,362	28,198,258 25,249,708	9,429,691 8,311,462	12,120,052 9,702,264	6,522,998 6,820,933	3,248,193 3,030,514	99,061,478 87,780,243

Possibilities
of Develop-
ment.

Apart from the increase in population—which must be considerable in the next few years—it is probable that Australia is purchasing almost to her full capacity, and the British manufacturer must, therefore, look for larger immediate sales to increasing his share of existing

trade : there is certainly plenty of scope in this direction, as I shall endeavour to show.

The first possibility, however, of an increasing trade with Australia depends upon growth of population. The consumption of imports ten years ago averaged £8 18s. 3d. per inhabitant, while last year it averaged £12 10s. This was, as I have pointed out, abnormal buying, and a fairer figure would probably be £11. The net increase in population last year was 77,556, which would account for a natural increase of trade to the value of £853,116. In view of the special efforts now being made by the Commonwealth Government and the various States to encourage immigration, and the liberal policy which is being pursued in comparison with that which previously obtained, I think the addition to the population for the next five years may well average 100,000 per year. This would increase the purchasing capacity of the market by over a million pounds sterling each year.

Probable
Growth of
Population.

The next possibility of increasing British trade lies in securing some of that large portion which is now in foreign hands. As will be seen on reference to the table on page 10, in 1905 the foreign countries supplied goods to the value of £12,821,929 or 33·44 per cent. of the whole. This they increased in 1906 to £15,355,753, or 34·33 per cent. of the total imports. In 1907 they increased their contribution to about £17,128,973. These figures are those obtained from the Commonwealth Customs Department, but, in my opinion, the trade of foreign countries with this market is much greater than the present system of collecting records can discover.

Proportion
of Foreign
Trade.

As I have elsewhere explained, the practice of distinguishing between "country of origin" and "country of shipment" was only adopted by the Commonwealth in 1905, and it is, therefore, impossible to make comparisons on a "country of origin" basis with previous years in order to ascertain the growth of foreign competition for Australian trade. We must, therefore, fall back on a table prepared by the Commonwealth Government, which shows the proportions of trade there with foreign countries since 1887, compiled on a

"country of shipment" basis. This, while not showing the actual proportion of British and Foreign trade, will indicate the comparative growth to some extent.

PERCENTAGES AND TOTALS OF AUSTRALIAN IMPORTS,
1891 TO 1907.

Years.	United Kingdom.	Per-centage of Total.	British Posses-sions.	Per-centage of Total.	Foreign Countries.	Per-centage of Total.	Total Imports.
	£	%	£	%	£	%	£
Annual Average, 1891-5	19,481,622	71·3	3,176,614	11·6	4,676,902	17·1	27,335,138
Annual Average, 1896-1900	21,797,837	64·0	3,747,312	11·1	8,217,888	24·3	33,763,037
Annual Average, 1901-5	22,895,869	58·3	5,005,286	12·8	11,356,646	28·9	39,257,801
1906 - -	26,575,833	59·4	6,751,270	15·1	11,417,809	25·5	44,744,912
1907 - -	31,937,545	61·6	6,680,468	12·9	13,191,020	25·5	51,809,033

British
Proportion
declining.

The above figures show that while the proportion of British trade to the whole of Australia's imports has declined by 10 per cent. in fifteen years, that of foreign countries has increased by 8 per cent. When we come to examine the values, moreover, those figures become much more serious. The British proportion for 1907, namely, 61·6 per cent., represents a value of £31,937,545, the British Possessions' portion of 12·9, £6,680,468, and the foreign countries £13,191,020. Of the British figure, however, at least £4,000,000 (and probably £8,000,000) worth were foreign goods re-exported, which, when added to the proportion of foreign countries, makes the growth of foreign trade a matter for very grave consideration. The most successful of the foreign competitors for trade are, of course, the United States and Germany, the former increasing her share from 6·41 per cent. in 1891 to 10·36 per cent. in 1906, and the latter from 3·63 to 7·16. The growth of the trade with British Possessions has been chiefly with New Zealand, India and Canada, in the order named.

Why is it that British trade has not grown in proportion to the expansion of the market and to the trade of foreign nations? Is it because of want of enterprise, conservatism, inadequate or inefficient trade representation, want of adaptability and the usual shortcomings which a voluble but interested and untrained consular service has credited the British manufacturer with in recent years? My opinion, and what is more, the opinion of the largest buyers in Australia is, that there is little to complain of in regard to these matters.

Causes of Decline.

My inquiries show that the most important reason for the growth of foreign trade in Australia is that the foreign manufacturer is able to quote lower prices than the British manufacturer for goods of equal value. This is without doubt the principal factor. There is a strong prejudice in favour of British goods throughout the Commonwealth, but that cannot prevail where there is a substantial difference in price. It must not be inferred from this statement that foreign manufacturers are dumping goods in the Australian market, for such is not the case, excepting in one or two instances, such as electric light carbons and steel rails. The fact is, that in many lines of goods the foreign manufacturer can trade—and profitably trade—with our Colonial markets at prices much below those which the British manufacturer can quote with any chance whatever of profit. I have made fairly exhaustive inquiries to ascertain the cause of this, not only in Australia, but amongst German and American, as well as English manufacturers.

Foreign Countries Under-selling.

My investigations go to show that there are three reasons; by far the most important of which is, that the foreign manufacturer, on account of his being able to depend on a definite consumption of his goods in his home market, is able to produce in larger quantities. On the other hand, the British manufacturer, owing to severe competition as well as dumping operations at his very door, cannot count with any certainty on the home market, and he is compelled, therefore, to manufacture principally to order, and consequently to put through small quantities at a time. There is abso-

Three Reasons.

Kind of
Competitive
Goods.

lutely no other method of production, wasteful as it is, open to the British manufacturer in many important lines at the present time with the prevailing uncertainty of demand. That is the principal reason why last year Germany, France, the United States, Belgium and Italy sent such enormous quantities of boots and shoes, hats and caps, cotton and woollen stockings, articles of clothing, furniture, drapery, gloves, piece goods, paper and stationery, galvanized sheet iron, barbed wire and netting, earthenware, cements, drugs, chemicals, agricultural and dairy machinery, electrical machinery and appliances, mining machinery, machine tools, printing and weighing machinery, tools of trade, lamps and lampware, &c., to our Australian markets.

Australia's
Foreign
Purchases.

To give a better idea of the character of the trade which competitive countries are doing, I give (by courtesy of Mr. G. H. Knibbs, F.S.S.) the following returns of Australia's principal purchases from foreign countries for 1906. These figures conclusively show that foreign nations are now doing a large trade with Australia in goods that can be produced in this country under proper conditions and in which a few years ago we were *facile princeps* :—

SOME OF AUSTRALIA'S FOREIGN PURCHASES IN 1906.

Belgium.—Apparel and textiles, £70,373; candles, £14,759; drugs and chemicals, £15,882; glass and glassware, £74,292; iron and steel, £112,843; jewellery, £17,253; leather, £13,657; machines and machinery, £36,164; manures, £35,330; matches and vestas, £28,303; metal manufactures, £122,644; paper, £30,502; railway materials, £100,500; motors, £32,009; wine, £37,966.

A large proportion of the iron, steel and metal manufactures, and of the manures from Belgium, is of German origin. The motors are almost entirely of French manufacture, and the candles are of Dutch manufacture.

Chile.—Alkali (soda), £35,943.

China.—Apparel and textiles, £9,826; rice, £10,659; tea, £19,869.

The decline of the value of imports from China during the past twenty years is due to the loss of the tea trade, which now draws its supplies mainly from India and Ceylon.

France.—Apparel and textiles, £67,167; corks, £11,518; drugs and chemicals, £114,573; fruits, £16,369; preserved milk, £56,635; spirits, £49,096; tiles, £11,472; cigars and cigarettes, £9,295; wine, £21,974.

The value of the direct imports recorded from France is much below the value of imports of goods of French origin. The most important imports of French origin are: apparel and textiles, £743,000; cream of tartar, £115,883; leather, £26,389; pipes, smoking, £34,056; spirits, £163,172; wines, £85,198; vehicles, motors, £46,627.

Germany.—Ale and beer, £46,208; apparel and textiles, £417,758; arms, ammunition, and explosives, £83,554; brushware, £18,288; cement, £41,892; china-ware, &c., £71,932; cocoa and chocolate, £22,892; cutlery, £14,562; drugs and chemicals, £140,684; furniture, £63,226; glass and glassware, £109,624; hops, £10,210; india-rubber manufactures, £33,058; musical instruments, £226,754; iron and steel, £81,083; jewellery, £33,897; lamps and lampware, £33,072; leather and leather manufactures, £29,655; machines and machinery, £202,517; manures, £32,990; matches and vestas, £40,335; metal manufactures, £562,324; paper, £209,953; railway material, £30,521; spirits, £57,121; stationery, £43,106; tobacco, £48,712.

The imports from Germany, as stated in the foregoing list, include considerable amounts of the produce and manufacture of other countries, but, on the other hand, still larger amounts of German goods are received into the Commonwealth from other countries.

Italy.—Apparel and textiles, £39,258; fruits, £31,083; matches and vestas, £17,901; marble, £14,569; sulphur, £13,500.

Japan.—Apparel and textiles, £224,255; bags, baskets, &c., £12,544; chinaware and earthenware, £10,551;

fancy goods, £11,147 ; furniture, £13,919 ; rice, £32,140 ; oils, £11,176 ; sulphur, £45,575.

Netherlands.—Apparel and textiles, £10,000 ; cocoa and chocolate, £22,307 ; cameos and precious stones, £16,847 ; manures, £12,116 ; spirits, £54,323. The value of the imports of Netherlands manufacture from all countries of cocoa and chocolate, amounted to £45,854, and of spirits, to £99,768.

Norway.—Fish, preserved, £9,830 ; milk, preserved, £8,459 ; timber, £280,535. The value of the total imports from all countries of preserved milk of Norwegian origin amounted to £76,587, and of preserved fish, to £22,082.

Switzerland.—Apparel and textiles, £22,822 ; milk, £2,299. The value of imports recorded as direct from Switzerland amounts to only 5·70 per cent. of the value of the total imports of the produce of that country. The principal articles of Swiss production imported were :—Apparel and textiles, £304,052 ; cocoa and chocolate, £23,895 ; milk, £80,655 ; cigars, £12,370 ; watches and clocks, £40,338.

United States of America.—Apparel and textiles, £164,266 ; arms, ammunition, and explosives, £112,094 ; boots and shoes, £42,895 ; clocks and watches, £36,471 ; drugs and chemicals, £65,801 ; fish, preserved, £104,013 ; furniture, £46,583 ; agricultural implements and machinery, £182,264 ; scientific instruments, £45,156 ; iron and steel, £106,949 ; leather and leather manufactures, £84,291 ; machines and machinery, £392,057 ; machine tools, £52,216 ; manufactures of metals, £408,462 ; oils, kerosene, £369,924 ; oils, other, £129,631 ; paper, £250,276 ; railway material, £74,548 ; resin, £44,604 ; timber, £606,693 ; tobacco, £312,266 ; tools of trade, £140,480 ; turpentine, £59,268 ; vehicles, bicycles, motors, &c., £73,515 ; wax, paraffin, £35,317 ; wicker and wood manufactures, £56,714.

In addition to the direct imports from the United States, which include Canadian goods to the value of £15,000, United States goods to the value of at least £1,000,000 were received through other countries. The greater part of this indirect trade from the United States

is received through the United Kingdom, and the principal articles thus received are : apparel and textiles, boots and shoes, leather, machines and machinery, and tobacco.

I am aware that foreign countries supply Australia with quantities of goods, such as timber, kerosene, tea, tobacco, and spices, which are not produced in the United Kingdom, and cannot be profitably distributed from this point ; but the outstanding feature of an examination of Australia's import trade is the alarming growth of the business of foreign countries in supplying those articles of which, a few years ago, we were the premier producers.

British
Manufac-
tures ousted.

The other reasons why foreign manufacturers are able to underquote British manufacturers in our Australian market are, that direct shipping services have been established with foreign countries, who generally carry foreign goods at lower rates than British Shipping Companies carry British goods, and that, following the development of manufacturing industries in foreign countries, and the establishment of those cheap shipping facilities, the markets for raw materials are being diverted to those countries. Where a few years ago Great Britain was the market for Europe for the principal raw materials, foreign countries now import direct, and, by carrying at lower rates, give their manufacturers an advantage in price in such raw materials.

Low Ship-
ping Rates
and Raw
Materials.

The difference in charges for oversea carriage to Australia on British, as compared with foreign goods, is an important factor. There is no doubt that it has been the direct cause of diverting trade in many lines. The subject is specially dealt with in a separate section of this Report.

High Rates
on British
Goods.

In another respect British manufacturers have been at a disadvantage with those of foreign countries. The latter have had energetic consuls, stationed in the leading commercial centres throughout the Commonwealth, who have kept them advised of all new contracts about to be placed by Government Departments and Municipal Bodies, besides, informing them of openings for trade that exist in the various States from time to time, and the methods that should be adopted

Lack of
Trade In-
formation.

to fill them. Our manufacturers have had no such facilities, though some are now being established.

There are, of course, other minor reasons for the growth of foreign trade in Australia, and I have endeavoured to detail them as completely as possible in other Sections of this Report.

Over-Seas Trade of New Zealand.

Growing
Market.

BOTH as a market for British goods, and a source of food supplies and raw materials, New Zealand is of rapidly growing importance to the United Kingdom.

Trade per
Head.

Her population, which now exceeds one million, is steadily growing, and it is testimony of the progress and fertility of the country that the total trade per head of the population (excluding Maoris) should have grown from £25 os. 11d. in 1897 to £40 13s. 3d. per head in 1907.

Imports and
Exports.

In corresponding years the imports per head have increased from £11 3s. 3d. to £18 16s. 6d., and the exports from £13 17s. 8d. to £21 16s. 9d. The total exports and imports for the past ten years are given in the following table, which also shows a large excess of exports over imports :—

TEN YEARS' TRADE OF NEW ZEALAND, 1897-1907.

Year.	Total Trade.	Imports.	Exports.	Imports (excluding Specie).	Exports (excluding Specie).	Excess of Exports over Imports (excluding Specie).
	£	£	£	£	£	£
1897 - -	18,072,216	8,055,223	10,016,993	7,994,201	9,741,222	1,747,021
1898 - -	18,748,555	8,230,600	10,517,955	8,211,409	10,449,838	2,238,429
1899 - -	20,677,968	8,739,633	11,938,335	8,613,656	11,923,422	3,309,766
1900 - -	23,892,257	10,646,096	13,246,161	10,207,326	13,223,258	3,015,932
1901 - -	24,699,339	11,817,915	12,881,424	11,353,416	12,869,810	1,516,394
1902 - -	24,971,700	11,326,723	13,644,977	10,958,038	13,635,459	2,677,421
1903 - -	27,799,053	12,788,675	15,010,378	12,075,959	14,971,926	2,895,967
1904 - -	28,040,042	13,291,694	14,748,348	12,900,030	14,738,750	1,838,720
1905 - -	28,484,804	12,828,857	15,655,947	12,481,178	15,642,069	3,160,891
1906 - -	33,306,540	15,211,403	18,095,137	14,303,170	17,992,480	3,689,310
1907 - -	37,371,818	17,302,861	20,068,957	16,539,707	20,061,641	3,521,934

It will be seen from the above table that New Zealand has doubled her trade in the past ten years, the imports and exports growing in approximate proportions.

In 1907 the United Kingdom imported produce and raw materials to the value of over £16,000,000 out of £20,068,957. But what proportion of New Zealand's import trade falls to our share? This is a very debatable question, and one can only form an estimate from conversations with leading importers in the Dominion, and impressions gained from examinations of their stocks and those of retail establishments. Neither the Board of Trade figures nor those of the Customs Department of New Zealand give an approximate indication of the extent of foreign competition. The records collected in the Dominion do not profess to indicate the "country of origin," and there is no system of collecting figures at home that will enable us to gauge it.

Britain's
Share.

It is to be regretted that New Zealand statistics have been quoted so widely in recent years by our own Board of Trade as well as many authorities in order to indicate the state of foreign competition with this Colony. For an impression has gained general currency that in no part of the Empire was British trade more firmly established than in New Zealand. As a matter of fact, competition is just as keen in that market as in Australia or South Africa, and the trade of Germany and America is growing there quite as rapidly. In many classes of cottons, velvets, velveteens, electrical machinery and appliances, agricultural tools and implements, drugs and chemicals, pianos and other musical instruments, furniture, glass, enamelled ware and fancy goods, tools of trade and hardware, and in many other important lines, in my opinion foreign countries hold the larger share of the trade.

Foreign
Competition
extremely
severe.

According to New Zealand Customs' figures, which are quoted by our Board of Trade, of the total imports for 1907 of £17,302,861 the United Kingdom contributed £10,278,019, British Colonies and Possessions £4,664,164, and Foreign States £2,360,678. I think I should be well within the mark (and I write after

Estimate of
Foreign
Trade.

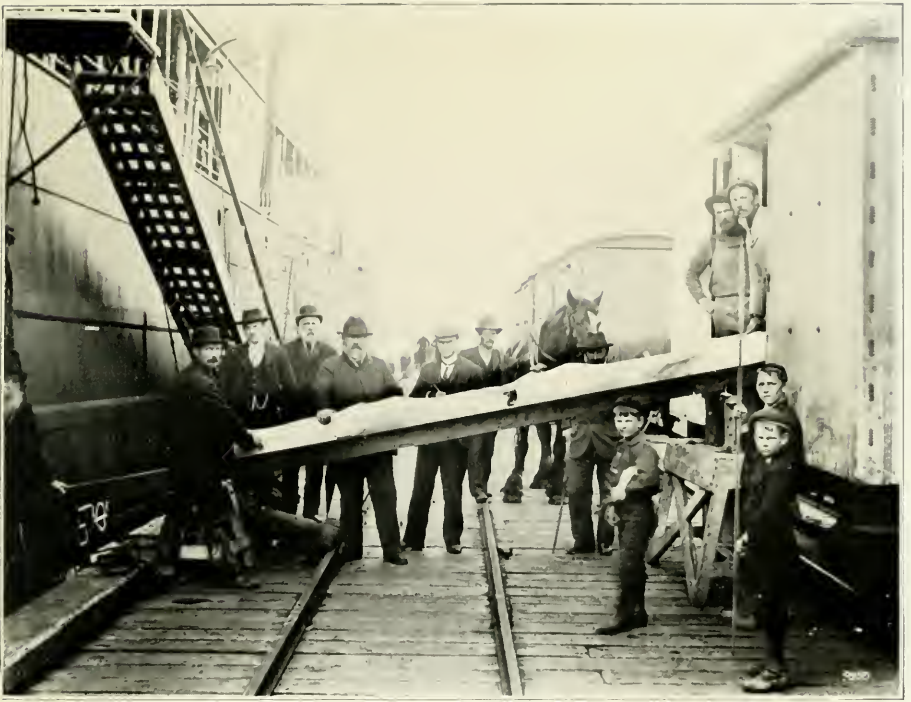
consultation with some of the largest importing houses in the Dominion), in placing the foreign share of the import trade at between six and seven million pounds sterling.

As I have said, New Zealand does not attempt to distinguish between "country of origin" and "country of shipment." Then, there is no direct steam shipping between the Continent of Europe and New Zealand, and so goods are forwarded *viâ* British ports, or carried by German or French vessels to Australia and transhipped to the Dominion. It will, therefore, be seen that where no attempt to distinguish "country of origin" is made, the trade under these conditions must largely appear as British. Even in the case of goods imported into New Zealand and claiming the preference, and in respect to which a certificate of origin has to be made out, a substantial portion are undoubtedly of foreign manufacture. In the case of New Zealand, South Africa, and Canada, the proportion of United Kingdom labour that has to be spent on goods to entitle them to preferential treatment is 25 per cent., and this is by no means high enough to ensure that only British goods shall take advantage of the preferred rate. The proportion ought to be raised to at least 50 per cent., or any less proportion in cases where the whole of the labour entailed in the manufacture is British.

It is a known practice for agents of foreign houses to establish themselves in Great Britain, and, from here, to work the Colonial markets. They take offices and small workshops, and have their goods consigned to them there, and as, for instance, in the case of machinery, have the separate parts of the goods delivered to them, and in this way reduce the freight bill to a minimum. These parts are then assembled, possibly slightly adapted for Colonial trade, named and painted, and they go forth to Colonial markets as British goods on which 25 per cent. of their value has been spent in labour in the United Kingdom. This practice of foreign manufacturers in working the Colonies in this way from Great Britain is also encouraged by the fact that the principal shipping services run from this country to New Zealand.

Foreign
Goods as
British.

Foreign
Manufac-
turers and
the Prefer-
ence.



SHIPPING FROZEN MUTTON AT PORT CHALMERS FOR LONDON.



LOADING HEMP AT AUCKLAND FOR SAN FRANCISCO.

SHIPPING NEW ZEALAND PRODUCTS.

The principal reasons for the growth of foreign trade with New Zealand are not want of enterprise, want of adaptability, but the ability of the foreign manufacturer to underquote those of our own country, and give quicker deliveries, due to his being better placed for economical production, and facilities to enable him to get his goods to market more cheaply than we can, both which subjects are dealt with in other portions of this Report. There are, of course, individual cases of want of enterprise, and so forth, and I have not hesitated to speak plainly about them in a later portion of this work.

Foreign
Firms
Underquote.

One often sees the statement that foreign countries are supplying New Zealand with goods, which for climatic and other reasons the United Kingdom cannot produce, such as oils, fruits, timber, tobacco, &c. If such goods formed the bulk of the trade, we could not reasonably complain, but the fact is that the rapid growth of foreign trade is taking place in goods in the manufacture of which we were supreme a few years ago. I have already indicated a few lines of trade in which we are being rapidly displaced, a list to which many more items might be added. In my detailed statement in the following pages I indicate more fully the state of competition in individual items of trade.

British
Goods Dis-
placed.

The Shipping Question.

IF there is one charge against the British manufacturer of "want of enterprise," to which he can offer no real defence, it is in respect to his treatment of shipping matters in recent years. He has utterly failed to appreciate the fact that his goods are always at a disadvantage with those of his competitors if they have to carry higher freight charges. The result has been a perfectly natural one, namely, loss of trade, through excessive freight charges and onerous shipping conditions. He is also now beginning to find out that his export trade to Australasia is entirely in the hands of a "ring," who can dictate to him any terms they

The Manu-
facturer and
Shipping
Conditions.

choose, while he is powerless to resist. He discovers that he has been building up a monopoly of the worst kind, and more than that, he has, under the name of "deferred rebates," parted with his gold, which is held by the astute shipowner as "good conduct money"—liable to forfeiture if the latter's game is not played properly. The position would be decidedly humorous if such grave issues were not involved.

An Immense
Trade.

As readers are aware, Australasia produces immense quantities of raw materials and food stuffs, which, owing to lack of population and of large local markets, she is unable either to consume or manufacture. Of these products some £60,000,000 worth are sent to Great Britain and the Continent every year, while Australasia imports from Europe no less than £80,000,000 worth of goods annually. This trade represents a very large tonnage, and many of those interested directly or indirectly in the commerce of the Empire will be equally astonished with the manufacturer to learn how completely the whole of this trade is in the hands of two gigantic "rings" or "conferences."

In the Hands
of "Rings."

These conferences, which work together, consist of all the British, German, and French Steamship Companies having regular services to Australia, and have for their object the absolute prevention of competition, with the consequent power to impose any rates of freight and conditions which they think proper. It will readily be understood that a monopoly so complete and absolute does not hesitate to exercise the power it possesses, and the result is that to-day freights are excessive, conditions on the shipper most onerous, and the service taken as a whole by no means fast or efficient. To comply with the terms of a mail contract with the Commonwealth Government, some fine vessels are now being built, which will considerably improve the Australian service.

The "Defer-
red Rebate"
System.

The conference maintains its monopoly through what is known as the "deferred rebate" system, which works in this way. Shippers of goods at the time of shipment are charged an additional 10 per cent. on the freight rate, which amount is returned by the

shipping companies at the end of from six to twelve months, providing that the shipper has not, meanwhile, sent goods by any line outside the ring. The shipment of a single package by any outside vessel entails the forfeiture of all rebates in the hands of the conference at that time, and such rebates in the cases of the principal shippers to Australia and New Zealand amount to considerable sums of money. In addition to this deferred rebate there is a further rebate or primage in respect to steamer freight given by the conference to merchants and shippers, and from enquiries which I made I find that in a number of cases neither the buyer in Australia nor the manufacturer at home gets any of those rebates. That, however, is principally the fault of the buyer and manufacturer. It will be seen, therefore, that the merchant and shipper directly benefit by the rebate system, a point which it is well to bear in mind in view of certain statements which have been made by the shipping companies, to which reference will be made in a later part of this section.

With the whole of the Australian trade tied up in the way referred to, it will be obvious that it is practically impossible for any outside shipping companies to enter the trade with any prospect of getting regular freight. Firms who have business to give are tied hand and foot, by having deposited in the hands of the ring, in the form of deferred rebates, large sums of money liable to forfeiture should they patronise a "tramp" steamer or outside line. Hence it is that a monopoly is maintained, concerning which there exists no power of supervision or restriction.

Competition
eliminated.

The proportional growth of German and American trade as compared with British trade in recent years has been most striking, and the evidence which I have collected and which is dealt with in various sections shows that this is largely due to the excessive charges and arbitrary conditions of the shipping conference. The difference in rates from Germany or America to Australia as compared with those from Great Britain to Australia is in many lines a profit in itself. On one class of goods I found a difference of £2 per ton. This was, I admit, exceptional, but it must be

"Rings"
encourage
Foreign
Trade.

remembered that on many lines of goods one-third of this sum will decide the Australian buyer to place his order outside of Great Britain—other conditions being equal.

The Bill of Lading.

Other points equally destructive of British trade are the conditions in the bill of lading of British goods, conditions which have been protested against by Australian buyers on several occasions. The British manufacturer is compelled to ship his goods on a bill of lading which is considered to be most inequitable, and in this respect also our principal foreign competitors enjoy advantages over manufacturers of our own country. In the United States steamship companies are treated as common carriers and are held responsible for any damage they might do to goods entrusted to them for carriage. The shipping companies are paid not merely to carry freight but to carry it safely, and—without asking to be put on the same footing as American competitors—it surely is not unreasonable for the British manufacturer to demand that “reasonable care” shall be exercised. I had placed before me numerous instances of heavy breakages of British goods during transit. How much of this is due to “bad packing” and how much to careless conduct of shipping companies who have no legal responsibility it is difficult to estimate. But what we do know is that it is the British manufacturer’s business that suffers in consequence of breakages, although he may be covered by insurance.

The irresponsible Ship-owner.

Unfair Classification and Restrictions.

Then the British companies classify their goods in such a way as to bring more under the higher rates of freight than should be the case, and they impose restrictions in regard to length and weight of individual packages which do not obtain to the same degree in foreign shipping companies.

Penalising British Trade.

An equally serious effect, however, which this unrestricted monopoly is having on British trade is in another direction altogether. Not content with extorting high rates on British goods, ring steamers directly penalise the British manufacturer by carrying American and German goods at considerably lower rates than British goods. For instance, I found at the time of my visit to Australia that a 30 per cent. less rate could be

obtained from New York to Australia *via* Liverpool in British steamers, than could be obtained in the same vessels from Liverpool to Australia direct, and that German goods were being carried in "ring" steamers at equally low rates. Herein we perceive the methods of the worst form of monopoly. Having succeeded in securely tying up British trade in such a way as to be able to charge what rates and make such conditions it chooses, the conference uses its power to try to kill opposition in the direct trade between America and Australia, and with such success that large American cargoes have continually been sent across the Atlantic and transhipped at Liverpool for Australia. In other words, the "ring" has been using the position it has secured—a position built up by the money of British traders and Australian buyers—to exploit the foreign shipping market by offering its surplus carrying space to foreign manufacturers at merely nominal rates. As far as can be judged, the excessive freight rates imposed on British traders and the low rates given to foreign competitors more than equal in effect the preference given to Great Britain in the new Australian tariff.

Value of
Preference
destroyed.

This deferred rebate system, which it must be said is now a perfectly open one, sprang from secret agreements which used to exist between the large shipper and the shipowner under which the shipper obtained specially low freight rates in consideration for his shipping only by the steamers of the said shipowner. As competition between steamship companies grew and working arrangements were made between lines engaged in a particular trade, the secret differential rate agreement had to be abolished, and there was substituted in its place the open deferred rebate system, which now exists in Australian, New Zealand, South African, and other trades, and which, while being, of course, commonly understood by merchants and shippers, is not so familiar to many buyers in Colonial markets or manufacturers at home.

Origin of
Deferred
Rebates.

It is claimed for the deferred rebate system that it enables the shipping companies to provide lines of steamers with regular sailings, and that it gives the Colonial importing house stability in rates—a decided advantage in the conduct of his business. Both these

Alleged
Advantages
of Deferred
Rebates.

points, which the system undoubtedly does achieve, would be excellent in their way if the manufacturer and the buyer had a voice in fixing the dates of sailing, the rates of freight, the accommodation and speed which should be provided, and the general conditions of transport. It would not be to the advantage of any trade depending on regular sailings of steamers to permit tramp steamers to cut in and unsettle rates from time to time, but, as everyone knows, there is no such danger in the Australian trade. The distances are so long as to absolutely prevent any undercutting by tramp steamers or regular competitive lines except, perhaps, for the shortest periods. Any serious competition with existing companies would need a very large amount of capital, and could not be carried on except for a very short time unless moderate freight rates prevailed. If the deferred rebate system, therefore, did not exist, rates would be bound to become stationary in a short time at a figure which would give a reasonable profit to the shipping companies and enable the Australian buyer and consumer and the British manufacturer to have, in addition to the benefits of limited competition, some control over the transport branches of their own businesses.

The British
Manufacturer
ignored.

Statements have been made by some of the shipping companies that before rates have been altered or conditions or classifications revised, the Australian trade has been consulted and their views taken into consideration. What has actually happened is that in one or two instances the home merchant shipping houses have been consulted, but neither the buyers in Australia, nor the makers of goods in Great Britain have ever had any voice in the fixing of rates or conditions. The merchants, in many cases, act as buying agents for Australian firms, and in that way are claimed by the shipping companies to represent Australian opinion on the subject. The fact, however, that such agents benefit directly by the transactions of the Ring, and by the continuance of the present conditions is evidence in itself of the partiality of any views that they might express. Even if they did fully and authoritatively represent Australian opinion on the subject, it should be remembered that that would be no guarantee that purely British trade

interests would be safeguarded, since the merchant can and does buy freely in foreign markets for export to the Colonies, and where there is a distinct advantage in freight rates by buying abroad, as a matter of business he will do it.

That this has been the effect of the position in the Australian shipping trade the following statement handed to me by a leading Australian Chamber of Commerce clearly shows :—

Views of a
Chamber of
Commerce.

“Considerable injury has been done to British trade with the Australian States by reason of the higher freights demanded by the Shipping Conference as compared with freights obtainable from New York, and that this is largely accountable for the increase in the importation of American goods.”

Here is an extract from a statement made to me by a leading South Australian importing house :—

Cheaper
American
Freights.

“The higher rates of freight charged from England to Australia than from America to Australia place British goods at a disadvantage. We often receive goods both from New York and Liverpool by the same White Star vessel, American goods paying, say, 32s. 6d. per ton, and English 45s. or 47s. 6d.”

Another large buyer in South Australia writes :—

More
Evidence.

“One of the effects of the Shipping Ring is that it is possible to get merchandise all the way from America *via* Liverpool at a lower rate of freight than for goods shipped in England from Liverpool.”

A Sydney House writes :—

Effect on
Engineering
Trades.

“We have recently imported from Great Britain a boiler, steam engine and steam generating set, and you will see from the enclosed freight notes that the rates work out at between 60s. and 70s. per ton weight. We can import similar machinery from America at 35s. per ton weight.”

One of the leading importing houses in Sydney writing to me on the subject of freights states that from time to time they are able to get extremely low rates from America and Germany, but are never able to get a low rate from Great Britain. They say :—

Low Ameri-
can Rates
kill British
Trade.

“At times freights as low as 5s. have been obtained. These have ceased for some time, but during their existence very large quantities of goods were imported. Everyone admits the value of a steady rate of freight in any trade, but when the rate is consistent at a high level only from Great Britain the advantage of the rebate system ceases to exist except to benefit shipping owners. Extremely low rates are obtainable from time to time from Germany, Belgium, France and America, and Australian merchants immediately take advantage of them to fill up their stocks.”

Effect on
British
Furniture
Trade.

A large firm of importers of office furniture and supplies in New Zealand writes :—

“At the present moment we are importing from New York *via* London at the rate of 37s. 6d., where from London we should have to pay, we believe, practically, 60s.”

Lower
German
Rates.

The lower rates obtainable by German vessels (in the “Ring”) from German ports is also responsible for loss of trade to Great Britain. A firm of general importers in Western Australia writes testifying to the lower rates prevailing from German ports. They find it cheaper in many instances to have goods forwarded to a German port, transhipped there and sent out in German vessels rather than brought from England direct in British vessels. An extract from their letter reads :—

“Freights by German steamers are, as a rule, lower than the British. As an instance I may mention that quite recently I purchased a parcel of Middlesbrough pig iron, which was carried at 23s. 6d. per ton to Fremantle by a German steamer, and this included freight across to Hamburg or Bremen, and transhipment there.”

Encourages
German
Drug and
Chemical
Trades.

I find that German firms are making headway in the New Zealand market in drugs and chemicals through the lower rates which are obtainable from German ports. An importing firm states :—

“Goods are shipped from Hamburg at 46s. 6d. per ton, whereas goods from England in the same bottom have to pay 60s.”

Effect on
Glass and
Enamelled
Ware,
—and Piano
Trades.

An importer in Wellington states :—

“We can get glass ware and enamelled ware from Germany from 10s. to 15s. per ton cheaper than from England.”

Another importing house affirms that “the trade in pianos has been diverted entirely to Germany through high freight charges from Great Britain.”

Encouraging
Electrical
Goods Trade.

A leading Melbourne house complains bitterly of the difference of freight rates from Germany and Great Britain respectively. They state :—

“We can get German-made electric lamps delivered here for 32s. per ton, and the last consignment of English lamps cost us 60s. per ton. It enables us to quote lower prices for the German goods, since lamps bulk largely, and so freight is an important item.”

Effect on the
Glass Trade.

An English glass manufacturer writes me that he is losing a large amount of trade in Australia and New Zealand through the difference in freight rates from

German and English ports respectively. He has personally investigated the matter and had identical packages sent from Hamburg *viâ* London and from London direct, and the difference in rates is a profit in itself.

A leading Sydney house writes :—

More Testimony—

“If we buy in Sydney from a German manufacturer through their agent, he invariably lands the goods in our warehouse at a far cheaper rate of freight than we can from Great Britain. How this is done, we know not, but are given to understand that a paternal Government assists German manufacturers to capture the Britishers' trade.”

I have picked out a few at random from the many communications received on the subject from leading Australian and New Zealand buyers. I could reproduce another score if it were necessary, but the position is so generally known in Australasia that it would be a matter of supererogation.

These are, in a few words, some of the effects on British trade of the methods of the London-Australian and London-New Zealand Shipping Conferences. The high freight rates on British goods are, without doubt, driving Australasian trade into foreign channels.

against
Methods of
Shipping
“Rings.”

This shipping question is one of vital interest to manufacturers, and the time has come when they must, if they are to retain their position in export markets, interest themselves directly in freight matters, instead of leaving them as heretofore to merchants and shipping agents. The Australian Merchants' Association in London and the Australian section of the London Chamber of Commerce have officially, through their representative, approved, as a whole, the present British shipping conditions with the Australasian market, and in particular of the deferred rebate system, when at the same time German and American goods are carried (and for longer distances) at lower rates with a consequent loss of British trade.

A Question
for Manu-
facturers.

If the merchant is satisfied with present conditions it shows that his interests in these matters are widely divergent from those of British manufacturers, and it only remains for manufacturers to take up the question themselves in their own interests and to follow the practice of German and American (as well as some

Merchants
support
“Ring”
Methods.

of the larger English firms) and conduct their own shipping arrangements, and by bringing themselves into direct contact with shipowners and shipping conditions find a solution to the present deplorable condition of things.

I have pointed out in another section (*see* "The Merchant and Colonial Trade") that it is absolutely necessary to the progress of British trade that a system of through bookings should be established. This is a matter that demands urgent attention.

Australasian Governments recognise the Evil.

I am glad to be able to state that the Australian and New Zealand Governments are fully alive to the gravity of the position and may be depended upon to co-operate in remedying an evil that seriously threatens their own interests as well as those of British trade.

General Information.

No clearly defined classification exists for the different lines of cargo from London, such as holds good in the South African trade. Rough deadweight, such as Pig Iron and Bar Iron, is carried by steamer at 25s. per ton deadweight. Other deadweight cargo, and also measurement, is carried at varying rates from 30s. to 70s. per ton of 20 cwts. or 40 cubic feet, according to the class of goods. Deck cargo is carried at shippers' risk, at up to 110s. per ton, and explosives at 105s. In round figures, freights may be classed by steamer, as rough deadweight, 25s. to 30s., deadweight and measurement, 30s. to 45s., and fine cargo, 40s. to 60s.

Rates from Great Britain.

The British Services.

The British Steamer Services are too well known to call for any special mention here. The P. & O. Company have a fortnightly passenger service working alternately with a similar service of the Orient Royal Mail line, calling at all the principal Australian ports excepting Brisbane in some cases. Lund's Blue Anchor, Federal-Houlder-Shire, Aberdeen, Shaw Savill and Albion, and the White Star lines also have regular sailings *viâ* South Africa to Australian ports, the two latter also working *viâ* Hobart and New Zealand ports. The Shaw Savill and Albion and the New Zealand Shipping Company's steamers make their homeward

voyage *viâ* Monte Video or Rio de Janeiro, Teneriffe and London.

The freighting of cargo from the United Kingdom to Fremantle is handled mainly by the West Australian Shipping Association, Limited, a local registered company, in which most of the leading merchants are interested. The sailer trade from home has now practically disappeared, but occasionally a steamer is loaded from United Kingdom ports to Fremantle by firms outside of the Shipping Association. These boats, however, carry special cargo, such as fertilisers, coke, and pig iron.

The Fremantle Trade.

The Australian coastal shipping trade between Fremantle and the Eastern States is entirely in the hands of six Australian companies, and is run strictly on the 10 per cent. rebate system. Probably the bulk of the cargo carried consists of Australian produce, the freights on which are, Adelaide 17s. 6d., Melbourne 22s. 6d., and Sydney 25s. to Fremantle. The interstate companies, however, do not claim to pay freight rebates but what they term bonuses, and they will sign no agreement. A good deal of friction has taken place in this connection during the last few years, but there has been little competition on the part of outside steamers.

Australian Coastal Trade.

The New York to Fremantle freighting is handled partly by those interested in the West Australian Shipping Association, Limited, and partly by an outside line. In the New York trade the indent merchants from the United States are either interested in the two different shipping connections, or find it advisable to avoid committing themselves definitely to one or another.

New York Trade.

The Calcutta-Australian trade is carried on by the British India Steam Navigation Co., Limited, and the steamers of Archibald Currie & Co., who work together, and there is a strict "ring" which binds Calcutta shippers there to forward goods only by one or other of these two lines. There is no outside competition, and it is typical of "ring" methods that freights to Fremantle are charged at 5s. per ton above Adelaide, Melbourne and Sydney rates, although the steamers call first at Fremantle, and then proceed to the Eastern States.

Calcutta-Australian Trade.

Queensland
Trade.

A four-weekly service has also been arranged for with the British India Company by the Government of Queensland, *viâ* the northern route.

Singapore-
Australian
Trade.

There is a fortnightly steamship service to Singapore carried on by the vessels of the West Australian Steam Navigation Co., Limited, and the Ocean Steamship Co., Limited. The freights are all quoted nett, as in the case of Calcutta, and there is no competition, the only other steamer on the north-west coast being one run by the Adelaide Steamship Co., Limited, carrying mails, and taking cargo at the same rates of freight as the Singapore line.

The German
Australian
Trade.

The German Australian Steamship Company have three lines trading with Australia as follows:—(1) regular four-weekly service from Brisbane, Sydney, Melbourne, Adelaide and Fremantle to Antwerp and Hamburg (*viâ* Suez Canal); (2) regular three-weekly service from Fremantle and Adelaide to Batavia, Samarang, Sourabaya, Singapore, and Penang, thence to Marseilles, Amsterdam and Hamburg (*viâ* Suez Canal); (3) regular four-weekly service from Melbourne, Sydney and Townsville, to Macassa, Sourabaya, Tjilatjap and Padang (*viâ* Torres Straits), thence to Marseilles (also The Havre every alternate steamer), Amsterdam, and Hamburg (*viâ* Suez Canal). The North German Lloyd have a regular four-weekly service of twin screw mail steamers to the principal Australian ports which they run *viâ* Suez Canal. They also have a regular four-weekly service between Japan, China, Manila, and Australia *viâ* New Guinea.

The French
Australian
Trade.

The Compagnie des Messageries Maritimes have a regular four-weekly service of passenger steamers from Marseilles to Australian ports.

Japanese
Line.

A Japanese Line with first class passenger accommodation is running between Sydney, Brisbane and Chinese and Japanese ports, with occasional cargo steamers which include other Australian ports.

China-
Australian
Trade.

The States of New South Wales and Victoria have recently contracted with the Eastern and Australian Steamship Co. to subsidise a steamship service to run every four weeks between Shanghai, Sydney, and Melbourne.

A monthly service is also maintained by the Union Steamship Company of New Zealand between Sydney, Brisbane and Vancouver, and Auckland and Vancouver *viâ* Fiji. At the time of writing this report I learn that Dr. Coulter, Assistant Postmaster General of Canada, is visiting Australia and New Zealand to confer with the Governments of those countries on behalf of Canada with a view to arriving at a definite understanding as to the respective contributions of the Colonies to the All-Red project. Dr. Coulter hopes to complete his mission by the early part of next year, when it is expected that Canada will be in a position to take the initiative in a definite realisation of this long-talked-of scheme.

The All-Red Route.

The Union Steamship Company of New Zealand also maintains an excellent service of fast steamers between Wellington and Sydney and The Bluff Tasmania and Melbourne as well as good services between New Zealand ports.

Union Steamship Services.

Some more detailed information concerning the Australian mail services is given in the following table taken from the "Commonwealth Year Book, 1907":—

Description of Service.	Frequency of Service.	Ports between which Service is maintained.
1. <i>To and from Europe viâ Suez—</i>		
(a) Peninsular and Oriental*	Fortnightly.	Adelaide, Fremantle and London, <i>viâ</i> Marseilles.
(b) Orient Pacific* - -	"	Adelaide, Fremantle and London, <i>viâ</i> Naples.
(c) Messageries Maritimes -	Monthly.	New Caledonia and Marseilles, <i>viâ</i> Fremantle and Adelaide.
(d) Norddeutscher Lloyd -	"	Fremantle, Adelaide and Bremen, <i>viâ</i> Genoa.
2. <i>To and from Europe, viâ Vancouver†—</i>		
Canadian Australian Steamship Company.	"	Sydney and Vancouver, British Columbia, <i>viâ</i> Brisbane.
3. <i>To and from New Zealand—</i>		
(a) Conjointly by Union Steamship Company and Huddart Parker Proprietary.	Weekly.	Sydney, Melbourne, Hobart, Bluff, Dunedin, Christchurch and Wellington.
(b) " " "	"	Sydney, Hobart, and Auckland.

* Mails carried also to India *viâ* Colombo.

† Carries also mails to Canada and the United States.

Description of Service.	Frequency of Service.	Ports between which Service is maintained.
3. <i>To and from New Zealand—</i> cont.		
(c) Conjointly by Shaw, Savill, and Albion Company and New Zealand Shipping Company.	Fortnightly.	Hobart, Bluff, Dunedin, and Wellington.
(d) Other steamers - -	Irregularly, when convenient.	Sydney, Melbourne, and Wellington.
4. <i>To and from Northern Ports of Queensland—</i>		
(a) Australian United Steam Navigation Company.	Weekly.	Brisbane, Gladstone, Townsville, Cairns, Mourilyan, Geraldton, Port Douglas and Cooktown.
(b) " " "	Once every three weeks.	Brisbane, Normanton and Burketown, <i>via</i> Townsville, Cooktown, and Thursday Island.
(c) Other steamers - -	Irregularly, when convenient.	Various.
5. <i>To and from Ports in South Australia—</i>		
(i) NORTHERN TERRITORY—		
(a) The Eastern and Australian, and the China Navigation Companies.	Irregularly.	To and from Adelaide, Melbourne and Sydney, <i>via</i> North Queensland ports extending to China and Japan.
(b) Jolly and Company -	Four times a year.	Port Darwin and Victoria R., calling half-yearly at Roper River.
(c) " " -	"	Port Darwin and Boroloola.
(d) " " -	Every eight weeks.	Port Darwin and Wyndham.
(ii) TO SOUTH COAST PORTS—		
(e) Gulf Steamship Company.	Weekly	Port Adelaide and Kingscote.
(f) " " -	Twice a week	Port Adelaide and Edithburgh.
(g) " " -	"	Port Adelaide and Stansbury.
(h) " " -	Weekly	Port Adelaide and Ardrossan.
(i) " " -	"	Port Adelaide and Port Vincent.
(j) Adelaide Steamship Company.	"	Port Adelaide and Port Lincoln.
(k) Adelaide Steam Tug Company.	As required	Landing and embarking mails.
(l) " " -	"	Port Pirie and Hummocks Hill.

Description of Service.	Frequency of Service.	Ports between which Service is maintained.
6. <i>Western Australia</i> —		
(i) <i>INTER-STATE</i> —		
(a) By Peninsular and Oriental and Orient Lines.	Weekly	Fremantle and Adelaide.
(b) Adelaide Steamship, the Australian United Steam Navigation, and the Huddart, Parker Lines.	Conjointly weekly.	Fremantle, Albany, and Adelaide.
(c) Messageries Maritimes, Norddeutscher Lloyd, the German and Australian, and the White Star Lines.	Each monthly.	Fremantle and Adelaide.
(ii) <i>TO AND FROM PORTS ON NORTH-WEST COAST</i> —		
(a) Adelaide Steamship Company.	Monthly	Fremantle and Derby.
(b) " " -	Once each 60 days.	Fremantle and Wyndham.
(c) Western Australia and Ocean Steamship Companies.	Fortnightly	Fremantle and Broome.
(d) Australian United Steam Navigation and Adelaide Steamship Companies.	Irregularly during the cattle season.	Fremantle, Derby, and Wyndham.
(iii) <i>TO AND FROM PORTS ON SOUTH COAST</i> —		
(a) Melbourne Steamship Company.	Weekly	Albany and Esperance.
(b) " " -	Fortnightly	Albany and Israelite Bay.
(c) " " -	Quarterly	Albany and Eucla.
7. <i>Tasmania</i> —		
(a) Union Steamship Company and Huddart Parker Proprietary.	Three times a week.	Melbourne and Launceston.
(b) " " -	Twice a week.	Melbourne and Birnie.
(c) " " -	Weekly	Sydney and Hobart.
(d) Union Steamship Company.	Fortnightly	Sydney, Eden, Launceston, and Devonport.
(e) New Zealand Mail Services, <i>see above</i> , New Zealand, 3 (a) and (b).	Twice a week.	Sydney, Melbourne, Hobart, Bluff, Dunedin, Christchurch, Wellington, and Auckland.
(f) To and from ports in Western districts.	Irregular	Various.

Description of Service.	Frequency of Service.	Ports between which Service is maintained.
8. <i>To Eastern Ports</i> — (a) A. Currie and Company -	Once every five weeks.	* Melbourne, Sourabaya, Samarai, Batavia, and Singapore.
(b) China Navigation, Eastern and Australian, and Burns, Philp Companies.	About three times a month.	Sydney to Hong Kong, Manila, &c., <i>via</i> North Queensland ports.
9. <i>South Africa</i> — White Star, Lund's, Currie's, and other Companies.	Irregularly	Various.

* Calling also irregularly at Sydney or Adelaide.

The Merchant and Colonial Trade.

Conditions
Changing.

I CANNOT help thinking, as a result of my inquiries and observations in Colonial markets, that the need of the home merchant to Colonial trade is diminishing year by year. In the past the conduct of export trade has rested almost entirely with the merchant, but conditions of commerce are rapidly changing in a direction which tends to place the manufacturer in more direct touch with the consumer, and thus dispense with the services of the middleman. This change is being wrought not from any choice on the part of the manufacturer, for he would prefer the old system, but by the competition of foreign nations which has necessitated a closer touch with markets, a personal contact with and understanding of consumers' requirements, and the elimination of every factor which will tend to raise selling prices.

Exporter
and Ship-
owner.

In the old days the manufacturer was compelled to look to the merchant to find him markets beyond our shores, for he it was, who, not only chartered and fitted out ships, but in many cases owned them outright. Not a parcel could be sent beyond our shores except through the intermediary of the merchant, and he was the individual who alone possessed knowledge of the openings for trade in foreign parts and British Colonies and "Plantations." Naturally the merchant had to be

paid for his services, not only for arranging transports, finding markets, but for the more difficult and hazardous work of financing each enterprise.

How different are the conditions of export trade to-day ! Instead of the merchant having to find, charter, fit and fill a vessel for export business, there are now regular sailings of fast vessels to practically all parts of the world, doing their work almost as regularly as it is possible to do it by railway transport. Entirely independent of the merchants, vessels steam alongside our wharves at fixed times, and pick up any freight whether consigned through a merchant, or forwarded direct by the manufacturer, or any one else, for that matter.

The steam ship and the telegraph have brought the most distant parts of the world comparatively close to us, with the result that Colonial markets are no longer the special preserves of the merchant. The manufacturer goes afield himself in search for trade, and is often able to book orders and contracts in competition with foreign rivals, which the home merchant could not possibly obtain for him.

Effect of
Steam Ship
and Tele-
graph.

I do not wish it to be understood that I am depreciating the value of the merchant in modern commerce, for he is still indispensable to a large volume of our export trade. He still, to a large extent, controls the shipment of goods, and acts as the intermediary in the matter of finance between the actual buyer and seller. But, if we take note of the methods of trade of modern commercial nations, we must reach the conclusion that the home merchant is a diminishing factor in export trade.

Merchant a
Diminishing
Factor.

The new nations, who are our rivals in foreign and Colonial markets, have adopted methods which we, if we are to retain our hold of our trade, must also adopt. American and German firms in particular, appoint their own representatives to ascertain openings for trade, or book orders, or they open branch houses, or appoint exclusive agents in the markets where the goods are to be consumed. The advantages to the manufacturer of this system of trading do not rely so much on what can be saved of the profits of the

Methods of
Competitors.

merchant if he had been employed, as on being able to directly dealt with the market, to personally control his own business, and to understand more thoroughly what the needs and requirements of each market are. The importance of this point cannot be over rated.

Direct Touch
necessary.

The time has come when the manufacturer must find out for himself what he can make to best suit each market. Competition is too severe to permit him to trust to the knowledge that might filter through the merchant's office, and after all, it must be remembered, that under our present Free Trade system, our home merchants can purchase as readily in Continental or American markets, those goods which more closely meet the requirements of their customers, than do the English goods for the time being; and when we consider that the merchants can often make a larger profit out of the foreign manufacturer than the British manufacturer, there is the temptation to let the latter shift for himself. This has always been the danger of relying entirely on the merchant without personally becoming acquainted with overseas markets.

American
Methods.

When I was in Melbourne recently there was there a representative of a file manufacturing house, lecturing to mechanics and others, on the advantages of American files. There had previously been another representative through that market lecturing on saws, while yet another American representative of a large electrical firm in the United States was lecturing to students and others on tramway construction. This is the class of missionary work which the merchant has never been able to do on behalf of British manufacturers, but it is the kind of work that is becoming increasingly necessary for the British manufacturer himself to undertake.

Manufac-
turer and
Shipping.

As I have stated, the merchant at present largely controls the shipment of goods to overseas markets and naturally there exists the closest working arrangements with the shipping companies. In the newer commercial nations, such as Germany and America, the home merchant does not play so important a part in commerce. Their export business is being built up

as a result of direct contact with overseas markets, and they facilitate this method of trading by arranging through bookings to Australasian ports. At the present time a German or American firm will quote c.i.f., Australasian ports, while British firms will only quote f.o.b., British ports. That is a very important point in favour of our competitors, and I cannot too strongly urge British manufacturers to press for the establishment of through rates from the United Kingdom.

Through
Bookings
necessary.

Attempts have been made to establish systems of through bookings with the Colonies, but they have been met with the opposition of the shipping companies, as well as the home merchant and shipping houses. I suppose it is only natural that such houses should object to any proposal that would tend to bring the manufacturer into direct touch with the retailer and consumer in overseas markets and thus deprive them to a large extent of their business. For this same reason the shipowner objects to through bookings, as the deferred rebate system can only be successfully worked through the home merchant and shipper.

To many branches of trade, and especially in dealing with some classes of textiles, and in the smaller lines, the services of the merchant are, of course, still indispensable, but it is time we realised more fully that the system of trading in Colonial markets of foreign manufacturers gives them distinct advantages over those British manufacturers who rely entirely on the home merchant.

The Market and How to Work it.

To effectually cover the Australasian market various conditions have to be taken into consideration, and these include, principally, the distribution and character of the population, and the railway and shipping services available.

Points to
Consider.

The total population of Australia and New Zealand is now about 5,500,000. In Australia the people are to a

The Popu-
lation.

Australia.

remarkable extent congregated in the towns, the principal of which contain the following numbers:—Sydney, 538,800; Melbourne, 526,400; Adelaide, 175,641; Brisbane, 132,468; Newcastle, 61,400; Perth, 53,800; Ballarat, 48,565; Bendigo, 44,140; Hobart, 34,985; Kalgoorlie and Boulder, 29,242; Broken Hill, 29,000; Geelong, 27,416; Launceston, 21,520; and Fremantle, 20,979. There are nine other towns having populations under 20,000 and over 10,000.

This concentration of population makes Australia a comparatively easy market for British manufacturers to work. Over 35 per cent. of the population is congregated in six cities.

Nothing can be more eloquent of the natural resources and fertility of Australia than that with the small number of people outside of the cities she should be able to produce goods for export to the value of £72,000,000 in 1907.

The States.

It may be well here to take a glance at the population of the various Australian States. In Western Australia there are approximately 261,746 people; in South Australia, 383,829; in Victoria, 1,231,940; in New South Wales, 1,526,697; in Queensland, 535,113; and in Tasmania, 180,156. It will be seen that the bulk of the population is to be found in New South Wales and Victoria, the two most highly developed States of the Commonwealth.

New Zealand.

In New Zealand quite a different condition of population exists; the people being more evenly distributed. Thus we find that there are the following numbers in the principal towns:—

Auckland, 86,810; Christchurch, 70,313; Wellington, 67,535; Dunedin, 58,036; Invercargill, 12,507; Palmerston N., 10,243; Napier, 9,454; Wanganui, 8,500; Nelson, 8,164; and Timaru, 7,615; Gisborne, Petone, Waihu, New Plymouth, Oamaru and Masterton have over 5,000 each, and ten other towns have over 3,000.

Transport Services.

With regard to the transport services particulars relating to these will be found under the headings Railways and Shipping, but I might mention a few points here as to the position in regard to travelling and transport facilities. All mail steamers from Europe at



A WHEAT STACK OF 150,000 BAGS AT WALLAROO, SOUTH AUSTRALIA.



A GLIMPSE OF THE GREAT COAL INDUSTRY, NEWCASTLE, NEW SOUTH WALES.

TWO NOTABLE AUSTRALIAN INDUSTRIES.

present call at Fremantle in Western Australia, but Fremantle is a week distant by sea from Adelaide, the capital of the adjoining State, and at present there is no railway between them. In an Australasian business policy, therefore, it will be necessary to treat Western Australia as a separate country, just like one would New Zealand. To hope to work Western Australia from an office and warehouse in Melbourne, Sydney or Adelaide would be more inconvenient than working Canada from London.

To work
Western
Australia.

Where manufacturers are considering the establishment of offices and warehouses, I consider Melbourne, or for branch factories the neighbouring town of Geelong, as the most suitable centres from which to work South Australia, Victoria, New South Wales and Tasmania (*see* map on p. 108). From these points the South Island of New Zealand can also be conveniently reached. Sites in Victoria also worth considering are Ballarat and Seymour.

Port
Philip as a
Centre.

An alternative centre is Sydney, further distant from Melbourne by about 580 miles, but enjoying as low freight rates as the former city. This is a more convenient centre from which to work Queensland, Wellington and the North Island of New Zealand generally, as well as the numerous small markets for cottons, prints, cutlery and fancy goods in the Pacific Islands, to which regular sailings of trading vessels take place from here.

Sydney as a
Centre.

Many firms have warehouses established at Sydney from which they now work the New Zealand market, but it is not a good plan where the trade is of any particular value, notwithstanding that there is an excellent shipping service between this port and the principal New Zealand ports. The rates of freight are comparatively high, as are the landing charges in Australian and New Zealand ports.

It is advisable in all cases where possible to treat New Zealand as a separate market, with, say, Wellington, as a distributing centre. If the trade is in agricultural machinery or specialities that will appeal particularly to the farming population, Christchurch or Timaru would possibly be more suitable as being

Work New
Zealand
separately.

situated in the best farming district. Where business will justify it, however, it is better to treat the North and South Islands separately and to keep stocks at, say, Wellington and Christchurch. For general classes of goods, however, I do not hesitate to express the opinion that Wellington is the most convenient centre from which to work the New Zealand market, and particularly when a representative is employed to book orders, and when only one stock can be held.

Character
of the
Markets.

I might give a few points here in regard to the general character of the markets. In Sydney and Melbourne, and in a lesser degree in Adelaide, Perth, and Brisbane, markets will be found for the highest class of goods; indeed, Australians are very extravagant in the matter of wearing apparel, and the English visitor, at first experience, is apt to gain the impression that Australian women are "overdressed," but the free use of silk and lace for morning street wear does not appear so astonishing when one gains a glimpse of the domestic features of Australian life as well as experience of Australia's consistent and salubrious climate.

The High
Class Trade.

The prosperity of the country is reflected in the demand which exists in these cities for the best classes of goods. Besides the prosperous middlemen, manufacturers and professional classes to be found in these cities, there is a large and wealthy class of squatter, who looks for the best in food and wearing supplies, and to an increasing extent includes in his requirements such luxuries as the motor car and electric-lighting plant for his up-country house.

The Cheaper
Trade.

Then there is the kind of trade to suit the artisan, and here a better class of goods is required than for our own trade at home. The Australian workman as a rule calls for a higher grade of goods than our own; his wages correspond with the prosperous condition of affairs that prevails, and in making his purchases he has developed a critical faculty which is foreign to our people at home. An important item is, of course, that large volume of trade which satisfies the requirements of the man on the land, consisting chiefly of strong, cheap, and serviceable goods—but always cheap. And here the manufacturer has to deal with a special factor,

especially in Victoria, New South Wales and Queensland—namely, storekeepers' associations, through which the up-country stores purchase large quantities of their goods.

In New Zealand, it must be borne in mind that the class of trade is very different in almost every line, excepting in engineering and machinery. The climate instead of being semi-tropical as in Australia, is more like our own, and the classes of goods one finds in New Zealand warehouses are very similar to those offered for sale in English country towns. The population is more largely farming than in Australia, the total number of factory hands in 1907 numbering only 18,000, which, with their dependents, would form only a small proportion of the total population of over a million. Here the requirements are largely for the farmer and settler class.

The New Zealand Market.

In Australia and New Zealand, Government departments, harbour authorities, and public bodies, are very large purchasers of machinery, material and supplies, and it may be of service to give a few notes on the methods of purchasing which these buyers adopt.

Purchases of Government and Public Bodies.

The West Australian Government calls for tenders for public works in their Government Gazette and also advertises in the local daily press. In the case of large works the leading papers in other States also receive advertisements calling for prices. It will be seen, therefore, that it is necessary for British firms to have either a branch house, a special representative or resident agent in Western Australia, in order to do business with the various Government departments. In the case of large orders for special machinery, locomotives, rails, &c., the Agent-General of the State in London either advertises for tenders, calls for prices privately or places orders with selected firms, according to the urgency and character of requirements. Tenders for the leading store lines required by the various departments are called for locally once in two years and, under the form of contract, merchants are bound to supply the quantity for which they tender, and if called upon to do so, up to 25 per cent. in excess, but, on the other hand, the Government are not bound to take delivery of any

Methods of West Australian

supplies whatever, which is an arbitrary condition of affairs against which the Fremantle and Perth Chambers of Commerce have for some time protested.

South
Australian
Conditions.

In South Australia the conditions under which Government contracts are placed and the method adopted of inviting tenders are very similar for all contracts of any magnitude. Public tenders are invited by advertisement in the Government Gazette and in the public press. Sufficient time is given intending tenderers—except in very urgent cases—to allow specifications and drawings being forwarded to Europe and for a reply to be received in time for tendering. Government Constructing Departments in some cases tender in the ordinary way for some works, and are treated as ordinary tenderers. In special cases of material required to be of highest grade a list of approved manufacturers is included in the specification. This particularly applies to such items as railway tyres and axles, steel for railway purposes, &c. In such cases competition is limited to the said manufacturers or their agents. This is also the case with other Governments, and British manufacturers wishing to open up business should see that their names are in such lists. Sometimes an indent is sent to the South Australian Agent-General, London, and the orders placed without calling for tenders, but this only occurs in instances where material of a special kind is wanted very urgently.

General conditions of contracts and specimens of local requests for prices may be seen by manufacturers at the offices of the Manufacturers' Association.

Similar
Practice in
other States.

The practice of the Governments of each of the Australian States as well as in New Zealand is very similar, as also is that of the harbour authorities, most of which hold franchises from the State where they are situate, and under which they are compelled to purchase most of their supplies locally. To buy outside of Australasia special permission has usually to be obtained. Manufacturers cultivating this class of trade should, of course, keep in close touch with the Agents-General of the various Australian States, as well as the representative of the Commonwealth Government and the High Commissioner of New Zealand in London.

With regard to general trade, there is no doubt that British manufacturers are somewhat at a disadvantage with those of Germany and America in the matter of representation and methods of trading. In Australasia, as in other Colonial markets, British trade has been built up largely through the merchant. The London merchant has, on his own account, gone to Australia and New Zealand and found outlets for certain goods and continued to work his business from London. Our national trade policy has enabled him to purchase British, German, French, Belgian, Swiss, American, and other foreign goods equally with British. Then there is the merchant house established in the Colonies, having buying agents or branch buying establishments in London, from where they are able to buy goods of any nation in the same way as the home merchant. In addition, there are the large retail distributing houses in the principal colonial cities, who as a rule also have their buying departments in England.

Representation of British Firms.

The Buying in the United Kingdom.

The British manufacturer has been content, in the past, with dealing with these houses generally through their London branches. Meanwhile, German and American firms have gone as direct to the retailer as is possible in the various lines of trade and it is this fact that has given them distinct advantages in being able through personal contact to more thoroughly understand the requirements of the market. Many British firms have hesitated to send out representatives in the fear of disturbing the trade relations which they have had, possibly for many years, with these London houses or branches, and so they have been more or less dependent on such houses for information concerning the requirements and peculiarities of the markets for the time being.

Direct Business.

Conditions of trade are undoubtedly undergoing a change, through the methods adopted by our competitors, who often, as I have pointed out in other sections of the report, not only sell their goods direct to retail houses in Australasia, but by interviewing, cataloguing and lecturing actual consumers create a demand for their special goods.

Conditions changing.

I am firmly convinced that this personal contact with the market is a potent factor in influencing the direction

Direct contact necessary.

of trade, and British manufacturers will undoubtedly have to adopt similar methods if foreign competition is to be successfully combated. I do not for a moment advocate indiscriminate sending of representatives to Australia and New Zealand, for, without working in co-operation with the powerful merchant houses, such a policy would have the reverse effect of that desired. Where a trade has been built up through such houses, I need scarcely remark, the obvious course is to work in co-operation.

Manufacturers themselves should Travel.

Where possible, directors or partners in manufacturing concerns should themselves cover the ground periodically. I do not attach so much importance to any actual orders that they may be able to obtain, as to the general impression they create in favour of their goods, and the invaluable knowledge which they would easily be able to secure concerning the peculiarities of the market and the way in which they could, often at little expense, more readily adapt their goods to meet them.

Agents want better Treatment.

An agent for a number of British firms in Perth expressed his views on the general subject of representation as follows :—

“The impression gathered from a ten years’ experience here is that, in many ways, the local representative or agent of a foreign concern seems to be invariably favoured in the matter of general treatment. In other words, in many cases that have come to my personal notice, agents for German and American (particularly the former) firms receive a more or less adequate subsidy or allowance for expenses—greater consideration in the matter of terms—they are kept supplied with more comprehensive stocks—the landing charges, such as duty, &c., being often borne by the principal—and added to this, frequent visits are made by representatives to Australia to render assistance to their agents. Against this, I have noticed very few instances of British firms allowing anything in the nature of a subsidy, while terms for payment, if not against documents, are rarely extended to more than 60 or 90 days. Local stocks are consequently limited because of such restriction of terms.

Visits of Representatives advocated.

“It is a fact that visits from representatives of British firms do not appear to be nearly so frequent as those of foreign firms, and I may add that I can conceive nothing more likely to conduce towards a satisfactory development of trade than a frequent and regular course of visits from direct representatives of firms doing business with Australia. Not only does the local agent receive a very great deal of support and assistance, but, what is more important, a first-hand impression of local conditions and requirements is obtained by the home firm, which is most essential.”

A New Zealand importing house advocates the sending of direct representatives, and gives some hints in regard to catalogues as follows :—

Representation and Catalogues.

"One of the best methods of pushing British goods would be for the manufacturers to send out direct representatives. This would enable them to ascertain the enormous possibilities of business with this Dominion, and they would gain the advantage of coming into perennial contact with clients. This is invaluable. As to the distribution of catalogues and printed matter, the one suggestion we have to make in this direction is the elimination therefrom of all English prices, as this not only tends to mislead, but often causes a large amount of unnecessary correspondence between the importer here and his clients in different parts of the Dominion."

Another hint in regard to catalogues comes from a large importing house in South Australia :—

Catalogues and Samples.

"We do not attach so much value to catalogue distribution. Samples sent direct to us, or submitted through an authorised agent, or a trade representative, bring more business to the manufacturer."

A manager of an important hardware house in Melbourne makes a point that was brought to my notice on several occasions :—

Only First Class Representatives wanted.

"The British manufacturer relies, in most cases, upon an agent, who is also acting for other firms, to place his goods on the market. This agent will represent a variety of firms, in many instances covering hardware, soft goods, stationery, and, most probably, a whisky manufacturer. As a rule, he has a very indifferent lot of samples, about which he knows very little. In many instances he has not visited the factory where they are made, and when it comes to talking to men who understand the trade, he simply does not know what he is talking about. On the other hand, the American manufacturer, when he wants to place goods on the market, does the business by sending his own representative, as a rule, a man who has been in his employ for many years, and thoroughly understands the manufacture of the goods he is seeking to place. He devotes the whole of his time to the one manufacturer's goods, and is vested with authority to enter into business arrangements and contracts on the spot, without referring the matter to his home house. Very often he is a partner in the business. Where it is necessary to carry samples, these fully illustrate all the articles manufactured in every detail. In this matter the British have a lot to learn from America."

I have already pointed out that, for business purposes, Western Australia is as far from Melbourne or Sydney as London is from New York. Quite a number of British firms appoint sole agents for Australia in Melbourne or Sydney, without realising that it is almost impossible for them to do business with this State from those centres unless they appoint a sub-

Treatment of Western Australia.

agent, and this is invariably unsatisfactory, because the margin of commission available for the local sub-agent is entirely inadequate to enable him to work the agency efficiently. Discussing this matter with a firm in Western Australia, one of the principals said :—

“ I have myself written to British firms with a view of securing their agency for this State, and in many cases have been informed that somebody in Melbourne or Sydney is their Australian agent, and I must refer to him. I know that in one or two cases the said agent does not trouble his head about this State, and that is where the German comes in again with a direct agent on the spot, and takes business which a British firm should, and would, secure, probably, with a direct agent here. Generally, on this subject, I would advise that in appointing Australian agents, Western Australia should be constituted a separate territory, with a direct agent.”

Quicker
Deliveries
wanted.

I must impress upon British manufacturers the importance of giving quicker deliveries of wheels, axles, forgings, plates, &c., to the State engineering shops. Some orders which were placed early in 1906 have taken eighteen months to execute, a period which considerably exceeded the contract time. It has been impressed upon me that further orders will be placed in foreign countries if British firms do not give quicker deliveries in future. It is, of course, most difficult for British firms under existing conditions to maintain large stocks, but the alternative is a loss of a certain amount of Australian trade.

Neglect of
Orders.

As a general rule, Americans give a very much quicker delivery of goods for export than British firms. The reason for this, as I have pointed out in another chapter, is due to more favourable economic conditions to the manufacturer prevailing in the United States. There is no excuse, however, for the condition of things referred to in the following statement from a Melbourne house :—

“ Many of the old-established houses in Great Britain take from four to six months to deliver goods ordered, and this for staple lines. Their reply to complaints on this score is generally that ‘orders are taken in rotation.’ This refers to goods which are being imported regularly and stocked by very many houses in Australia, and does not refer to what might be called season’s goods, where a rush of orders might be expected at one particular time of the year. The class of goods the writer has in mind is cutlery, such as manufactured by a firm like ———, of Sheffield, who are one of the worst offenders in this respect. Another firm to whom the same remarks apply is that of ———, of Glasgow.”

It often facilitates the business of the agent or representative in Australia if his name is included in the advertisements of the manufacturer in the trade papers at home, many of which I found largely circulating throughout Australia.

Agents' Names in Advertisements.

When quoting for goods and contract work in Australia, manufacturers should remember that by forwarding specifications and drawings by parcels post they arrive at Melbourne, Sydney, and Brisbane from three days to a fortnight later than if sent by letter post. I found several cases where orders had been lost through this apparently small matter being overlooked.

Hint about the Mail.

In quoting prices for contracts for goods and machinery to London houses or Agents-General always remember that your agents in Australia and New Zealand are probably quoting locally for the same contract. Prices must agree or you discredit your agent. I know of several cases where this has occurred.

Remember your Agent.

The general terms of credit are much the same as in other colonial markets. Goods are sold for cash in London, or cash on arrival, or 30, 60 or 90 days after arrival, according to arrangement. It is usually not difficult to ascertain the financial standing of Australian and New Zealand importing houses through either local bankers or London branches of the leading Australian banks. More detailed reports, however, can be obtained from credit agencies, such as Bradstreets and R. G. Dun & Co., who have offices in Melbourne and Wellington.

Credit to Australasian Houses.

British and Foreign Trading Methods.

I WONDER whether there has ever been a British Consular Report compiled on the trade of any overseas market that did not contain the following three charges against the British manufacturer—"want of enterprise," "want of adaptability," and "bad packing." They

Popular Complaints.

have been uttered with untiring monotony during the past decade, but one very seldom sees a statement in such reports giving actual instances in support of the charges, and I believe that the defects in this connection have in recent years been more apparent than real.

Methods of
New Com-
petitors.

A new country, like a new firm, when starting export business, gains a footing by giving exceptional value, exceptional credit, and taking an excessive (and immediately unprofitable) amount of trouble to gain new customers. This has been the case with Germany and America, whose methods — compared with those of Great Britain, who has been so long in the business — must have appeared, superficially, to warrant a comparison being made that was unfavourable to our own country.

Direct con-
tact with
Market.

Then, British export trade has been largely built up through the merchant, who has kept the actual consumer as far away as possible from the manufacturer, whereas modern countries have gone direct to the markets with which they have to do business. The British manufacturer is gradually meeting these new conditions, and his apparent want of enterprise is disappearing as foreign nations are settling down to business for profit, and the British manufacturer is getting into more direct touch with markets, a practice which, as I have urged in another place in this Report, should be increased.

Complaints
not numer-
ous.

In travelling through Australia and New Zealand, I must say that I did not find many instances of want of enterprise, want of adaptability, or bad packing, and I do not think that very much trade is going into foreign channels on this account. Of course, there are individual cases which I report in detail in this work.

New Lines.

Some Australian houses complain that British firms do not introduce new lines so frequently as foreign firms, and this they ascribe to want of enterprise in many cases where it is want of conditions at home favourable for the manufacture of goods in quantity.

United
States

Then, again, conditions of life and climate in the United States are in many respects similar to those in

Australia and New Zealand, rendering it easier for that country to produce certain lines of goods suitable for Australasia, yet these circumstances have enhanced the reputation of our commercial rival for adaptability, where there really was none.

That the British manufacturer is rather slow in his methods, that he will not make medium and low class goods, and that he will not go in for a high "flashy" finish with highly-coloured labels, setting out the virtues of his goods, are points which will always tell against him in a new country, where the foregoing characteristics are specially called for, as in the case in some branches of the Australasian trade. We undoubtedly make a mistake in sacrificing everything for quality. "Value for money" in my view should be the guiding principle in catering for Colonial markets. The quality must be accommodated to the price buyers can afford to pay. British goods have a far higher reputation for quality than those of other countries, but I have often been met with the remark from storekeepers that "British goods are too good for my trade."

One of the largest importers in South Australia accounted for the success of foreign competition in the following terse statement:—

"Reasons:—Cheaper capital, cheaper labour, advantages in supply of raw material, better technical education, better factory organisation, larger output, better sales organisation, conducting foreign trade on little or no profit in order to keep works running full time, trusts and dumping, bounties, bonuses and subsidies to ocean carriers."

There is much that I agree with in this cryptic diagnosis. One may go to the Colonies and discover the immediate reasons for the success of foreign trade, but the real causes lie deeply hidden in our social, industrial and economic systems at home.

In going through the warehouse of a large importing firm in New Zealand, having numerous branches, I was struck by the large quantity of goods which they carried of foreign manufacture, and seeing that they were goods which are regularly produced in Great Britain, I endeavoured to ascertain why American and German productions were bought. The managing director

favourably
circum-
stanced.

British
Manufac-
turers and
Cheap
Goods.

Low-priced
Goods
wanted.

Causes of
Success of
Foreign
Trade.

British
Manufac-
turer under-
quoted.

stated in a few words the reason for the presence of foreign goods, *i.e.*, lower prices. He said :—

Quantities
Control
Prices.

"We have been established here for over fifty years, and must say that we cannot charge British firms with want of enterprise or adaptability, for they never gave us cause of complaint on these grounds. We are forced to buy in Germany or America because we can do so at lower prices for equal quality of goods. We have tried to ascertain the reason for this, and have visited the factories of German, American, and English firms, and in our trade we find the Americans and Germans making in very much larger quantities. For instance, in Germany or America an average three firms will turn out as large a quantity of goods as an average six firms in Great Britain. The goods, therefore, of foreign firms cost less to produce, and can consequently be offered to us at a lower price than it would pay British firms to quote."

Competition
in Metal
Manufac-
tures.

A South Australian importer gave me the following reasons for the success of foreign trade :—

"The principal countries which encroach on British trade are Germany and Belgium and America. With regard to the two former, our import trade is confined principally to fencing wire, wire netting, structural steel, and lamp glass ware, with little of the cheaper grades of tools, cutlery, and firearms. We take it that the reason they can beat British makers in the articles named is that the raw material is more easily obtainable, and that they have more favourable labour conditions, and also we believe manufacturers and shippers have the assistance of Government subsidies. In reference to America, we believe that this country threatens to be a very severe competitor owing to her vast natural resources, the cleverness of her inventors, and the pushing methods of her traders. She is taking a leading position in the manufacture of agricultural implements, firearms, ammunition, many kinds of tools, various classes of builders' hardware, and is, when she has surplus for export, bidding for trade in manufactured iron and steel and wire. We think Americans show greater adaptability in suiting their productions to local requirements, and possibly this is because, in portions of her territory, general climatic and other conditions assimilate more nearly to those of Australia than do those of the United Kingdom."

Three
Opinions.

Three large retail houses in Australia gave me the following opinions on the subject of competition :—

"When it is a question of quality we consider British goods will hold their own, but in articles in which quality is not essential, but appearance and price, American and German goods sell better."

"The reason why German and American export business has increased is that in most cases they are specialists and manufacture on a large scale."

"One reason I can give for an increase of German and American trade is that they keep on introducing new lines."

Freights and
Credits.

German and American firms often have a distinct advantage over British firms in being able to quote *c.i.f.* Australian ports, instead of *f.o.b.* British ports, which,

through shipping arrangements, the British manufacturer is compelled to do at present. The convenience of the former method to the Australian importer is a considerable one. German firms are also at present able to give longer credits, but I do not find the same tendency with American houses.

Patriotism will induce the Colonial buyer to endeavour to obtain British goods where possible, and conditions, prices and delivery being equal it is sufficiently strong throughout Australasia to secure business for the Mother-Country, but it cannot do more than this. A Dominion importing house put the matter to me very candidly. They said: "Whilst New Zealand, as a whole, is Imperialistic in her ideas, Imperialism goes to the wind unless the homeland is able to supply an article which is in price and quality equal to, if not better, than that offered by her competitors."

I heard a good many complaints that the British manufacturer, generally speaking, did not give sufficient attention to detail as compared with the American. For instance, in regard to boots, large quantities of which continue to be imported from the United States, a merchant stated that:—

"The British manufacturer thought he had done well if he provided him with two fits to the one size, and again in collars if he gave him half sizes, whereas the American in boots will give four or five fits, and in collars quarter sizes. These instances of detail are very important, and we suggest that the British manufacturer would do well to send a representative periodically to see what was being done, and as a result take advantage of the small detailed improvements in which British goods contrast unfavourably with American."

An instance occurred quite recently of the indifference, which I think is all too prevalent, displayed by British firms to small enquiries. An importer in Western Australia writes:—

"I wrote to a Manchester firm asking for their catalogue and quotations for certain foundry lines, and at the same time wrote similarly to an American firm, neither of which were locally represented. Despite the additional time which the American enquiry took, I received a letter in reply giving me the quotes desired, and also a very complete and comprehensive set of catalogues long before my British enquiry was replied to, and then all that reached me was a bundle of leaflets with no accompanying letter. I would add that the American firm has since sent me a monthly circular regularly, and always evince a keen desire to do business."

Sentiment
and Trade.

Attention to
Detail.

Attention
to Enquiries.

The Question of Packing.

With regard to the question of Packing, I was glad to find a distinct improvement in the way in which British firms pack, label, and mark their goods to that which I found to exist a few years ago when I visited some of the Colonies. Indeed, throughout my tour I heard remarkably few complaints. In some cases where breakages had occurred through what was described as "bad packing" I am inclined to think that the blame rested more with the British shipping companies.

Responsibility of Shipping Companies.

American shipping companies are known to take greater care in the handling of goods, but the lack of breakages of American goods is often ascribed to good packing. The American shipping companies are treated as common carriers and held responsible for the proper and safe carriage of goods entrusted to them, and if some responsibility for careless or culpable handling were thrown on our own shipowners I do not doubt that there would be still fewer complaints of "bad packing" against British manufacturers and traders.

Americans excel.

That Americans are more expert in this work I must admit, and also that they understand the art of labelling and boxing and parcelling for shelf trade. But here, again, the British manufacturer is blamed for much that no amount of enterprise on his part can remedy. Freight charges from the United Kingdom are high and are calculated by measurement. Our manufacturers, in many cases, could not afford to put up certain classes of shelf goods in separate cardboard boxes as is the practice with American firms, as the freight charges would be too heavy. They are often compelled to so pack them as to economise space to the utmost extent. Competition is extremely keen in shelf goods, and every addition to the price delivered tells against the British manufacturer. His apparent "want of enterprise" in this respect, therefore, is often due to circumstances over which, at present, he has no control.

Freight Charges a Factor.

A Testimonial.

It is pleasant to read opinions on this subject like the following from a leading South Australian firm which was sent to me through the Adelaide Chamber of Commerce :—

"As regards packing and labelling by British firms, there has been a marked difference during the past few years, and we have nothing to complain of. The Britisher is always ready to carry out our wishes with reference to the 'get up,' labelling and packing of our goods. At one time this was not so."

It is my duty, however, not so much to emphasise the pleasant things spoken of the British manufacturer as to deal with criticisms and suggestions which might help him in his business. So I give the following statement by one of the largest hardware distributing houses in Melbourne :—

"American manufacturers, as a rule, are very much better packers than British, using, to a very large extent, the system of dispensing with straw, or other packing material, and relying on fixing the goods in the cases by means of wooden cleats, this making them immovable during transit. Goods packed in this way arrive much cleaner, and are very quickly made ready for sale. The Americans also, as a rule, pack more goods into the same space than the British. Hints on Packing.

"American manufacturers never charge for outside casing—British always do. (Wood is extremely cheap in America.—B.H.M.)

"With regard to boxing, wrapping and labelling goods the Americans are far ahead of the British. They use to a very large extent attractive cardboard boxes or cartons, with equally attractive labels in two or three colours on the outside, fully describing the contents.

"Take, for instance, *Electro-plated Ware*: the usual British custom is to wrap the goods in paper and tie with string. It is easily seen that such articles as teapots, *entrée* dishes, cruets, &c., make very irregularly shaped parcels, which are hard to put away on shelves or fixtures where bulk stock is generally stored. It means that very often, where an article is required, perhaps two or three dozen have to be pulled down. Another disadvantage is that these packages are not air-tight, and the goods, when opened, are very often tarnished. The Americans first wrap the article in soft paper, and then place it in a cardboard box or carton, which is so sealed as to be perfectly air-tight. An attractive label is pasted on the outside, fully describing what is within. Goods packed in this way are in much better condition on arrival, and are, without doubt, much easier to pack away on shelves. Electro-plated Ware.

"American stoves are specially packed in skeleton cases, to protect corners and parts liable to breakage. The British manufacturer either sends them without cases of any kind, or, if they are cased, a very stiff price is charged. American Stoves.

"As a general rule the American manufacturer is much more open to suggestions for improvements in methods of packing than the British; in fact, to suggest to some of the old-established British manufacturers that their method of packing should be altered, will, more often than not, call forth the rejoinder that they do not consider that their methods can be improved upon."

Standard
Crates and
Casks
wanted.

A leading firm of general merchants in Sydney, in referring to the packing of British firms, states that:—

“The breakages in packages of crockery is frequently very extensive, mainly owing to the weak character of the crates and casks in which the goods are contained. The shipping companies will not accept any liability for breakage, as they claim that the packages are not sufficiently strong for the contents. This could be amended if a standard class of crate or cask were adopted.”

50 per Cent.
Breakage.

In another instance a large consignment of glass shades for gas burners were sent out by an English firm and 50 per cent. arrived in a broken condition. The importing house not only had to bear the loss of the broken goods, but as they were required for an urgent order they were compelled to buy locally at prices much higher than they had bought in England, with the result that in this connection, also, they lost a further £30. Manufacturers should remember this point, that by replacing a broken article they do not altogether compensate the Australian importer, for where time is a consideration—and it usually is—he is put to the trouble and expense of replacing the article locally. Some German and American houses guarantee that the breakages in the case of glass and other fragile goods shall not exceed 5 per cent. Their agreements with their shipping companies and the responsibilities of the latter for breakage enable them to do this.

Packing
Shelf Goods.

Finally, I give the following comment on the subject made to me by a leading South Australian firm:—

“American traders have the happy knack of giving their goods an attractive appearance, and of putting up their goods conveniently in suitable packages for shelving and retailing, details in which some English houses have been remarkably dilatory in following them.”

Australasia as a Field for Industrial Enterprise.

Prospects
for Manu-
facturing
Industries.

It was part of my mission to ascertain the prospects of establishing manufacturing industries and branch factories in Australia and New Zealand, and accordingly I made very many enquiries both verbally and through the medium of the Chambers of Commerce,

who very kindly distributed amongst their principal members lists of questions on the subject of my investigations, and the conclusions which I give in this section are based, not only on the impressions which I personally gathered, but also on the more reliable statements of firms and individuals who have been long resident in Australasia. British manufacturers will do well to seriously consider this phase of the economic development of Australasia.

The Governments and the people of the Commonwealth and Dominion are determined to have factories of their own. They now have in operation highly protective tariffs, which, while giving a preference to British goods, will effectively encourage local industries. In addition to tariff support, contracts are constantly being placed with local manufacturers at prices over 10 per cent. higher than those which they would have to pay for imported goods. There is a determination to become more self-supporting by creating and maintaining industries. In this way also they hope to assure a maximum condition of employment at home, even if, through consequently enhanced cost of production, higher prices for goods have to be paid.

Strong
Desire for
Factories.

Manufacturing is also encouraged by bounties and largely by Government contracts, and these latter are a very important factor, since in such new countries the State Governments undertake railway, water, road, sewerage, and other works, for which they purchase goods and machinery in large quantities.

State Assist-
ance—

It is another encouragement to manufacturers within the Commonwealth that some of the State Governments are compelling those bodies holding State franchises, such as Harbour and Port Authorities, to order only such machinery and goods as are manufactured within the Commonwealth. If local productions are unsuitable it is necessary to obtain a special authority to purchase from other countries.

and of
Public
Bodies.

Then there is in Australia a very strong feeling in favour of local productions; "Support Australian Industries" is a cry that is heard throughout the Commonwealth, and is a sentiment which materially assists the local manufacturer.

"Support
Australian
Industries."

The Problem
for British
Exporters.

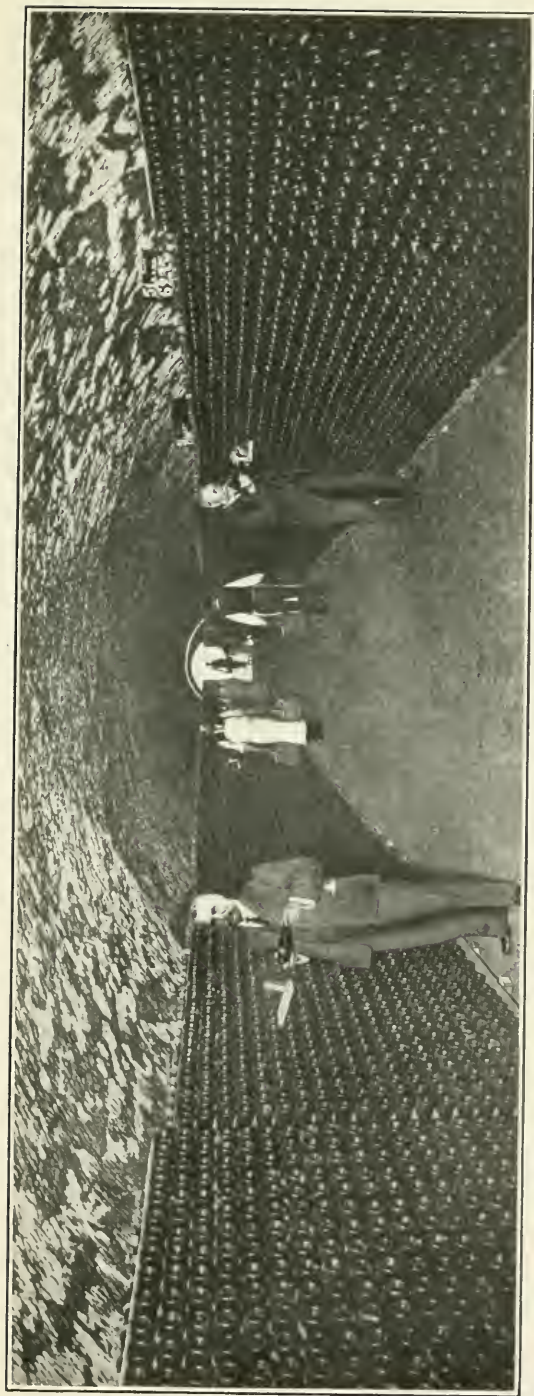
For those who have hitherto been carrying on a profitable business in the Australasian market, the question to consider is, Can that business be profitably maintained for a number of years under the new tariffs and in the face of increased competition from local industries and foreign manufacturers? If so, then manufacturers will do well to keep their home works busy; but if not, they will be well advised to examine very closely the possibilities of manufacturing inside the tariffs. There are undoubtedly exceptional openings for starting factories in Australia and New Zealand at the present time.

Factories
must be
British.

It would be highly dangerous to our trade interests if we ignored the fact that factories will be established in increasing numbers during the next few years, and it is most essential to British trade that they should be established with British capital rather than with German or American. We do not want to see in Australasia a repetition of our experience with Canada. There through sheer neglect we have left it to our United States competitors to establish branch factories in the Dominion, with the result that the largest works now in Canada are run with American capital, and largely with American hands. Trade follows capital, and so every year there is an enormously increasing export trade from the United States to Canada.

Labour
Conditions.

A distinctly erroneous impression exists amongst manufacturers and capitalists in Great Britain concerning labour conditions in Australasia. As one who has studied labour conditions in many countries, besides having some personal experience of them in our own country, I might here say that my investigations show that capitalists need have no fear of labour in Australasia. When one appreciates local circumstances, the apparently extraordinary legislation no longer appears unreasonable; indeed, some of the largest employers say that they prefer running factories in a country where wages and hours of working are regulated in a measure by the State. This subject is dealt with more fully in another section, and here I would only mention that the Australian is an excellent worker, and if his wages are high and he is



A VIEW IN ONE OF THE WONDERFUL WINE VAULTS AT GREAT WESTERN VINEYARD (HANS IRVINE AND CO.), WHICH TOGETHER CONTAIN OVER 100,000 DOZEN BOTTLES OF WINE. THESE CELLARS ARE OVER A MILE IN LENGTH AND ARE CUT OUT OF THE SOLID STONE. THE SPARKLING WINES HERE PRODUCED ARE STATED TO BE EQUAL TO ANY IN THE WORLD.

A GLIMPSE OF AUSTRALIA'S GREAT WINE INDUSTRY.

aggressive and sometimes troublesome, it must be remembered that the profits of manufacture are also high and the country is extremely prosperous.

There are in Australia at the present time about 11,500 factories, employing 228,721 hands. Over the previous three years there has been an increase of factory employment of over 30,000 hands. If industries could grow so rapidly under old conditions, what must be the increase in the next few years under a protective tariff, and when the determination of the country is to support local industries even when considerable sacrifices have to be made.

Last year in New Zealand there were 78,625 factory workers, which was an increase over 1905 of about 12,000. This also shows a satisfactory growth of local industry, and the new conditions in the Dominion must stimulate that growth.

Owing to the existence of large quantities of raw material in certain districts it is possible, in some lines, to manufacture cheaper than we can in Great Britain with our lower prices of labour. I know of some cases where goods are being turned out of Australian workshops at present at a less cost of production than we can show in this country, and in some of these cases a large quantity of the material has to be imported from Great Britain or America! I was favourably impressed with the Australian as a worker, and if testimony were needed of his capabilities it might be pointed to in the great mining industry at Kalgoorlie, where in spite of the fact that the miner often earns as high as £5 per week, the cost of mining and reduction is as low as that which prevails on the Rand, where Kaffir labour is employed; and it cannot be said that the result is due to machinery, for, in my opinion, the Kalgoorlie mines are not so well equipped as those on the Rand. Much of the credit for this excellent work must undoubtedly be given to the mine managers, who are amongst the most highly skilled and best paid of any in their profession.

I give in the following pages a few rough notes on the openings that appear to exist for the establishment of industries in Australia and New Zealand.

Industries in
Australia.

Industries in
New Zealand.

Favourable
Local
Conditions.

Notes on
Openings for
Industries.

Agricultural
and Dairying
Machinery.

The factories already established in the Commonwealth for manufacturing agricultural and dairying machinery employ about 3,500 hands and those in New Zealand about 850. Australia imported in 1907 over £400,000 of implements, and New Zealand £112,000, while in cream separators alone Australian imports last year were valued at £155,000 and of New Zealand at £49,000. In Western Australia, Victoria, Tasmania and New Zealand in particular there are good openings.

General
Machinery
and Manu-
factures in
Metal.

There are about 22,000 hands employed in industries in the Commonwealth and 4,500 in New Zealand in general engineering, but scarcely the fringe of the business has been touched by those factories already established, as may be seen from the table on page 147, giving the imports for 1907. In mining machinery, steam engineering and pumps a good deal is being done, but there are good opportunities in other directions.

Iron and
Steel.

Both the Commonwealth and Dominion Governments are most anxious to establish iron and steel industries; they have the raw materials in abundance and are prepared by Government contracts, bounties, and in other ways to attract capital and enterprise.

Leather.

There is undoubted scope for the establishment of further leather factories. Some 10,000 hands are employed in the business in Australia and about 2,000 in New Zealand. Nearly £400,000 of leather was imported in 1907 into the Commonwealth, besides about £250,000 in boots and shoes, belts, &c., while the importations under both heads into New Zealand in the same year exceeded £396,000. I do not think that an opening exists for making the higher grades of leather, which, for various reasons, cannot be satisfactorily produced.

Bags, Sacks,
Cordage and
Twines.

There are excellent openings for factories for manufacturing bags, sacks, &c. The importations into Australia alone in 1907 exceeded £1,100,000 in value. The principal bags and sacks are for bran, chaff, and other fodder, corn and flour, and woolpacks. Any quantity of flax can be grown in Australia, while in New Zealand large quantities are already being grown and further supplies can be obtained from Papua.

Flax growing is not a big industry in Australia yet, but I believe it will be in the course of the next few years. Unfortunately the efforts of growers have been rather depressed recently through the mill which absorbed the greater part of the product of one State having been destroyed by fire. The Victorian growers sold the whole of their flax to this mill where the straw was treated and the fibre afterwards sold to manufacturers in the State, who at present purchase their supplies from New Zealand, Manila and other markets.

Flax
Growing.

No less than £1,290,000 worth of woollen piece-goods, flannels and blankets were purchased by New South Wales in 1906. There is no doubt that several new mills will be started there in the course of the next few years. Local productions have an excellent reputation and the public show a preference for them. There is a nucleus of trained labour in the existing mills, and the conditions are generally favourable for the establishment of at least two new factories. In South Australia, also, there is an opening for a modern mill, and in Western Australia, though the population is small, it is quite large enough, and probably would profitably support a fair-sized factory. A great deal of the plant in Victoria is old-fashioned and their methods also. Colonial blankets differ from the English, but have come to stay, and are now preferred to English. Any manufacturer starting should arrange to send out some expert workers when their machines were ready.

Woollens.

There is an excellent opening in New Zealand for the establishment of brick works. Excellent clay abounds in the North and South Islands, but ordinary bricks at the time of my visit were fetching between £3 or £4 per thousand. All building materials are particularly dear in New Zealand, and anyone taking up brickmaking just now, with sufficient capital and practical experience, would do so with excellent prospects of success.

Brick and
Tile Works.

There are excellent opportunities for the employment of capital in Australia and New Zealand in connection with coal mining. In Queensland and New Zealand there are deposits of anthracite equal to the best Welsh, and in Western Australia the Collie coal is

Coal Mining
and
Briquette
Making.

being worked most successfully, the output at present averaging 200,000 tons per annum. New South Wales and New Zealand are producing the greater quantity at present used. New South Wales produces the bulk of the coal used in Victoria and South Australia. In Victoria there are immense deposits of brown coal which can be successfully dealt with in the form of briquettes. There is an opening here for a very large industry and any syndicate dealing with the matter on a fairly large scale would receive the hearty support of the Victorian Government. This coal has been successfully burnt in gas producers, as also has the Collie coal ; and of course, the Queensland and New Zealand anthracites are eminently suitable for producing this cheap form of power.

Fertiliser
Industries.

There is considerable demand in South Australia and other Southern States for fertilisers, particularly superphosphates. The quantity consumed in South Australia has increased from 3,000 tons in 1897 to 65,000 tons in 1908 in regard to cereal cultivation alone. Thousands of acres, which a few years ago used to be looked upon as entirely valueless for wheat growers, have been converted into rich grain-producing areas by the use of chemical manures. Land which formerly grew scrub alone now yields from ten to twenty bushels of grain per acre.

Sea Fishing
Industries.

Several of the Governments of the southern States are anxious to establish sea-fishing industries on a substantial scale, and Scottish fishermen have recently visited Australia and made exhaustive enquiries into the prospects for such industries. There is little doubt that there are excellent openings and that next year will see industries started in co-operation with the State Governments. Builders of trawlers and makers of fishing tackle should keep in touch with these developments. A few figures relating to the position of the fishing industries of the Commonwealth might be of interest. At the present time some 2,800 men are engaged along the northern coast in pearl and pearl-shell fishing, and the annual export is of the value of about £200,000. In Western Australia it is estimated that about 1,500 tons of fish were caught and



PEARLING IN THE NORTHERN TERRITORY.



THE MORNINGTON TIMBER MILLS OF THE KARRI AND JARRAH CO.

INDUSTRIES OF WESTERN AUSTRALIA.

sold last year, in addition to which the State imported to the value of about £50,000. In South Australia the fish product is valued at £50,000 per annum, while a considerable quantity is imported. In Victoria there are about 10,000 men engaged in the industry, and the output is estimated at £75,000, while the imports exceed £30,000 per annum. New South Wales imports fish to the value of over £80,000 per annum, while the local production exceeded the value. Pearl and oyster fishing are extensively carried on in Queensland, from which 33,000 cwt. of oysters were exported last year. China purchased over £10,000 worth of sea slugs.

The Dunlop Rubber Co. of Australasia is an instance of what can be achieved by local industries in Australia. Their works were opened in May, 1901, having been equipped with machinery of the latest kinds at a cost of £70,000. Since that time they have been continually enlarging, besides working double shifts to cope with the business. The output of the Dunlop Mills, which employ over 800 hands, now comprises cycle and motor tyres, rubber and Balata belting, packings, insertions, gasket—in fact, all engineering and mining requisites, solid rubber vehicle tyres, rubber heels (equal to 90 tons per annum), sporting requisites, waterproof clothing, and Dunlop hose of absolutely every description. The annual output of the two Dunlop Mills is now closely approaching half-a-million sterling, and is on the increase.

Rubber
Works.

It would be easy to double the length of this list of openings for the profitable employment of capital, but my object has been not so much to give detail information of the opportunities for industrial enterprise as to show in a general way that they do exist in Australasia under the new conditions, and that it is of the utmost importance to British trade that they should be taken advantage of by British manufacturers and capitalists rather than by those of foreign nations.

British
Capital
wanted.

In the sections dealing with "The Market and how to work it" and "Docks and Harbours" some information is given as to the most suitable towns in which to establish factories and warehouses.

Sites for
Industries.

Labour Conditions.

State Regu-
lation of
Industry.

LABOUR conditions in Australia and New Zealand differ very widely from those that obtain in our own country. In Australasia the fixation of hours and wages of workers in factories and mines as well as of some classes of farm hands is controlled by the State. To those of us who have had experience of manufacturing conditions in England this condition of affairs, at first sight, will not commend itself.

Conditions of industry in the Colonies, however, are so totally different from our own, that we can only judge of the wisdom or otherwise of Colonial industrial legislation after taking into consideration the peculiar local circumstances and the results which have followed the operation of their laws.

A Measure
of Success.

Personally, I am bound to admit that, after travelling through the principal States of Australia and the Dominion, and discussing the position with the leading employers, Labour leaders and Trades Union officials, I have gained the impression that State regulation of industry in Australasia has been successful in many respects. The subject is too complex to admit of any treatment in detail here, and I only give one or two general impressions in regard to the position.

Industrial
Legislation.

A few notes on Trade Unionism and Industrial Legislation in Australasia will be found in the Appendices. From these it will be seen that Wages Boards are in operation in Victoria, South Australia and Queensland, and compulsory Arbitration Acts in New South Wales, West Australia and New Zealand, while there also exists a Commonwealth Arbitration Act, which covers any dispute which may directly affect more than one State in Australia.

Has
reduced
Strikes.

It is beyond question that the effect of this legislation has been to obviate serious strikes. What statistics are available clearly show that, both in Australia and New Zealand, a fewer number of working hours have been lost on account of labour disputes than in any other industrial country which might reasonably be compared

with it. This is a matter of extreme importance. It is not claimed that either Wages Boards or the Arbitration Acts in force do more than fix hours and wages, and other conditions, in a peaceable manner. Those who expected that these measures would produce an industrial paradise are disappointed. No legislation can alter human nature. In removing labour disputes from the arbitrament of force to an atmosphere of judicial sense and reason, Australasia has set an example, which, in my view, will be widely followed in new countries.

It is not generally known that previously to the establishment of Wages Boards in Australia "sweating" existed in its worst form. These Boards have succeeded in almost entirely eliminating that evil. Eliminated Sweating.

So much can be unhesitatingly said in favour of the industrial legislation of Australia and New Zealand: but what has been the general effect on the trade and industry of those countries? That is a much more difficult matter to gauge. There is no doubt on one point, however, namely, that this legislation, which has necessarily been experimental, has shaken confidence and so prevented the free flow of capital to Australia and New Zealand from this and other countries, and the development that would naturally result therefrom. Effect on Trade and Industry.

If the terms of those Acts and their working in practice were better known I believe that a large measure of confidence would be restored. Locally, State regulation of industry has actually given a feeling of security and permanency to industry, consequent on its having rendered serious strikes impossible; and if the true state of affairs was more clearly realised in Great Britain there would, in my opinion, be much more British capital invested in Australasian industries than there is at the present time. Local Effect.

The Australian is an energetic and intelligent worker. The conditions of life in Australia give him initiative and independence of character which is not possessed by our own workers living under more congested conditions. For the same reason, however, he is not so amenable to discipline, but on the whole he impressed me favourably. The Australian as a Worker.

Dearth of
Skilled
Labour.

The great weakness of the industrial situation lies in the dearth of skilled labour which exists in Australia and New Zealand.

The policy of the Labour party in the past has been to restrict immigration with a view to maintaining a high standard of wages. Matters have now reached such a condition, however, that the leaders of the party, with whom I discussed the question, expressed themselves in favour of encouraging a larger influx of population. They see that, unless a large increase of skilled labour takes place shortly, the operations of industries will be hampered and restricted and the cost of living be inevitably increased. Those of the Labour party who take a more statesmanlike view of the situation are also beginning to recognise that advancement in national progress and character can only be coincident with the growth in population.

Immigration
under
Contract.

The present leaders of the party, however, are antagonistic to immigration under contract. At the present time workers are admitted freely where no contract exists as to their employment on landing. The Contract Immigrants Act, 1905, defines a contract immigrant as an immigrant to Australia under a contract or agreement to perform manual labour in Australia. The contract must be in writing and must be made by or on behalf of a resident in Australia.

Its terms must be approved by the Minister of External Affairs before the admission of the immigrant. It must not be made in contemplation of, or with a view of affecting, an industrial dispute. The Minister must be satisfied that there exists a difficulty of obtaining a worker of equal skill and ability in the Commonwealth, but this last provision does not apply to contract immigrants who are British subjects either born in the United Kingdom or descended from persons there born. The terms of the contract must offer to the immigrant advantages equal to those of local workers. Domestic servants and personal attendants accompanying their employers to Australia are excluded from the operation of the Act. Contract immigrants not complying with the above conditions are excluded from Australia.

The subject is one of the greatest importance, as it is

absolutely necessary to introduce workers under contract in order to develop Australian industries under the new tariff. No business man, with the present dearth of skilled labour in Australia, would pay the cost of importing trained workers, unless those workers were bound to him on their arrival for a period of years. To start a new industry in a country like Australia, the manufacturer is compelled in every case to bring with him a nucleus of men for his factory, as the skilled labour available in the market is only that which is generally called for by the industries already existing.

In the case of New Zealand the situation is entirely different, there being no restrictions of any kind regarding emigration to hinder the development of industries.

In Appendix VI. are given tables of the wages prevailing and the principal items of cost of living in Australia and New Zealand.

Labour in
New Zea-
land.

Wages and
Cost of
Living.

Australasian Railways.

ANYTHING in the nature of a study of the railways of Australasia would by itself fill more than a volume of the size of this one, and I propose in this section to merely give an idea of the extent and character of the various railway systems, the new work under construction and projected, and the openings which these railways present for trade in rails and railway material, machinery and supplies for railway shops and the raw and semi-manufactured materials for the construction of rolling stock which is now being carried on to so large an extent in the Commonwealth and the Dominion.

The total sum expended in railway construction and equipment in Australasia up to the present time exceeds £165,000,000, of which £140,000,000 has been spent in Australia and the balance in New Zealand. These railways provide an important source of revenue to the respective States, the returns in some cases showing large profits on working.

Total Ex-
penditure.

The table on page 74, taken from the 1907 Report of the Commissioner for Railways for Queensland, will

COMPARATIVE ANALYSIS OF RAILWAY ACCOUNTS IN THE STATES OF QUEENSLAND, NEW SOUTH WALES, VICTORIA, SOUTH AUSTRALIA, WESTERN AUSTRALIA, AND THE COLONY OF NEW ZEALAND,
(TAKEN FROM THE LATEST OFFICIAL RECORDS).

Particulars.	QUEENSLAND.		NEW SOUTH WALES.		VICTORIA.		SOUTH AUSTRALIA.		WESTERN AUSTRALIA.		NEW ZEALAND.	
	Year ended 30th June 1907.		Year ended 30th June 1907.		Year ended 30th June 1906.		Year ended 30th June 1906.		Year ended 30th June 1906.		Year ended 31st March 1907.	
Area in square miles -	-	-	-	-	-	-	-	-	-	-	-	-
Population -	668,224	-	309,175	-	87,884	-	903,690	-	975,876	-	104,471	-
Miles open -	535,113	-	1,526,697	-	1,231,940	-	383,829	-	261,746	-	908,726	-
Gauge -	3,137½	-	3,452½	-	3,394	-	1,745½	-	1,611½	-	2,456	-
	3 ft. 6 in.	-	4 ft. 8½ in.	-	5 ft. 3 in.	-	3 ft. 6 in. and 5 ft. 3 in.	-	3 ft. 6 in.	-	3 ft. 6 in.	-
Capital expended on open lines -	£21,839,081	-	£44,700,230	-	£41,398,037	-	£13,610,520	-	£9,965,940	-	£23,504,272	-
Average cost per mile open -	£6,961	-	£12,946	-	£12,197	-	£7,797	-	£6,183	-	£9,570	-
Population per mile of railway -	171	-	442	-	363	-	220	-	162	-	370	-
Cost per head of the population -	£40 16s. 3d.	-	£29 5s. 7d.	-	£33 12s. 1d.	-	£35 9s. 2d.	-	£38 1s. 6d.	-	£25 17s. 4d.	-
Gross earnings -	£1,829,673	-	£4,709,406	-	£3,787,619	-	£1,349,765	-	£1,634,444	-	£2,624,600	-
Working expenses -	£912,638	-	£2,499,741	-	£1,999,023	-	£764,385	-	£1,201,753	-	£1,812,482	-
Profit on working (after paying working expenses) -	£917,035	-	£2,209,665	-	£1,788,596	-	£585,380	-	£432,691	-	£812,118	-
Percentage of net earnings to capital expended on open lines -	£4 4s.	-	£4 18s. 10d.	-	£4 6s. 5d.	-	£4 6s.	-	£4 6s. 10d.	-	£3 9s. 1d.	-
Percentage of working expenses to earnings—	-	-	-	-	-	-	-	-	-	-	-	-
Maintenance -	16'13	-	12'60	-	15'11	-	15'08	-	17'94	-	23'39	-
Locomotive -	19'57	-	24'04	-	20'81	-	28'60	-	34'66	-	23'07	-
Traffic -	13'01	-	14'71	-	15'53	-	11'81	-	18'67	-	19'05	-
General -	1'17	-	1'73	-	1'33	-	1'14	-	2'26	-	1'55	-
Total -	49'88	-	53'08	-	52'78	-	56'63	-	73'53	-	69'06	-
Earnings per average mile open -	£383'17	-	£1,374'01	-	£1,115'97	-	£773'17	-	£1,017'08	-	£1,081'41	-
Working expenses per average mile open—	-	-	-	-	-	-	-	-	-	-	-	-
Maintenance -	£94'08	-	£173'10	-	£168'62	-	£116'56	-	£181'95	-	£252'94	-
Locomotive -	£114'11	-	£330'35	-	£232'27	-	£231'12	-	£351'43	-	£271'07	-
Traffic -	£75'86	-	£202'16	-	£173'28	-	£91'32	-	£189'32	-	£206'03	-
General -	£6'84	-	£23'71	-	£14'81	-	£8'85	-	£22'92	-	£16'76	-
Total -	£200'89	-	£729'32	-	£588'98	-	£437'85	-	£745'62	-	£746'80	-
Earnings per train mile -	5s. 11½d.	-	7s. 3½d.	-	8s. 0½d.	-	6s. 11½d.	-	7s. 6d.	-	7s. 9½d.	-
Working expenses per train mile—	-	-	-	-	-	-	-	-	-	-	-	-
Maintenance -	1½d.	-	1½d.	-	1s. 2½d.	-	1s. 0½d.	-	1s. 4d.	-	1s. 9½d.	-
Locomotive -	1s. 2d.	-	1s. 9d.	-	1s. 8½d.	-	2s. 7½d.	-	1s. 11½d.	-	1s. 11½d.	-
Traffic -	9½d.	-	1s. 0½d.	-	1s. 3d.	-	9½d.	-	1s. 5d.	-	1s. 5½d.	-
General -	½d.	-	1½d.	-	1½d.	-	1½d.	-	2½d.	-	1½d.	-
Total -	2s. 11½d.	-	3s. 10½d.	-	4s. 3d.	-	3s. 11½d.	-	5s. 6½d.	-	5s. 4½d.	-
Number of passenger journeys -	9,301,342	-	41,413,084	-	65,088,394	-	10,715,343	-	12,816,766	-	9,600,786	-
Goods tonnage -	2,261,239	-	8,542,851	-	3,376,987	-	1,692,233	-	2,067,664	-	4,592,099	-
Live stock tonnage -	95,857	-	250,381	-	299,050	-	55,213	-	28,850	-	233,664	-
Average number of passengers per mile of railway -	2,969	-	11,994	-	19,177	-	6,138	-	7,932	-	7,939	-
Train mileage -	2,969	-	12,949,068	-	9,392,069	-	3,875,167	-	4,359,633	-	6,755,454	-
Average train miles per mile of railway -	1,953	-	3,750	-	2,767	-	2,220	-	2,705	-	2,751	-

show the position of the principal systems so far as same could be judged from figures available at that date.

THE RAILWAYS OF AUSTRALIA.

Australia, like Canada, is a country of enormous distances, but railway development has made so much headway, that it is now possible to travel a distance of 3,303 miles, from Long Reach in Queensland to Oodnadatta in South Australia, on one continuous line of railway. The distance between Adelaide and Melbourne is $482\frac{3}{4}$ miles, Melbourne and Sydney $582\frac{1}{2}$ miles, and Sydney and Brisbane 725 miles. The only means of transport between Western Australia and the other States at present is by sea, which takes at least four days from Fremantle to Adelaide. These long distances are an important factor in Australian business life.

At the 30th June 1907 there were 14,109 miles of State-owned railways in Australia, and $616\frac{1}{2}$ of private-owned lines open for general traffic. There were also 452 miles of private lines not available for general traffic, making a total mileage for Australia of $15,258\frac{1}{2}$.

It is much to be regretted that no common policy has governed the development of railways in the respective States of the Commonwealth, and so one finds a remarkable mixture of gauges, as the following table will show:—

GOVERNMENT AND PRIVATE RAILWAYS. CLASSIFICATION ACCORDING TO GAUGE OF ALL RAILWAYS OPEN ON THE 30TH JUNE 1907.

State.	Mileage Constructed to Different Gauges.*					Total.
	5 ft. 3 in.	4 ft. 8½ in.	3 ft. 6 in.	2 ft. 6 in.	2 ft.	
	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.
New South Wales	45½	3,453	35½	—	—	3,534
Victoria - -	3,314½	—	—	81	—	3,396
Queensland -	—	—	3,240	—	—	3,240
South Australia -	594	—	1,272	—	—	1,866½
Northern Territory.	—	—	145½	—	—	145½
Western Australia	—	—	2,458½	—	—	2,458½
Tasmania - -	—	—	594¾	—	23¼	618
Commonwealth	3,954	3,453	7,746¾	81½	23¼	15,258½

* The mileages of private lines are as up to the 31st December 1906.

Two Remarkable Projects.

In addition to the new railway work briefly referred to in the following pages, two immense railway projects are gradually assuming definite shape in South and Western Australia.

The one project is to connect Kalbarlie with Port Augusta, South Australia. The survey of the line is now being energetically proceeded with at both ends, and it is estimated that the cost of constructing the line will be about £5,000,000. There is no doubt that this line would be of immense value to Australia, as passengers and mails disembarking at Fremantle would then train through to Adelaide, Melbourne, Sydney and Brisbane, and arrive at the two latter cities over a week earlier than the fastest steamer now running could carry them. The other proposal is to connect Oodnadatta in South Australia with Pine Creek in the North, a distance of 1,063 miles. From an engineering point of view this project presents comparatively small difficulties, as the worst gradients would be 1 in 80 for about 2 miles. The only difficulties between Oodnadatta and Alice Springs are a few miles of sandhills and the spanning of the Finke. From Alice Springs to Woodford Creek, 100 miles, the railway would cross high tableland country about 2,000 feet above sea level. Then there would be a descent to Teatree Well, 1,490 feet above sea level. The gradients for the rest of the distance would be exceedingly easy. The climate throughout the country to be tapped is excellent all the year round, and the contractors would meet with no difficulty in the matter of obtaining water and supplies of food.

Railways will increase.

There is no doubt that with the adoption of a common policy of closer settlement throughout the Australian States the need for railways on a largely increased scale will become more pressing. Another circumstance which demands more direct railway communication between the various grazing districts is that of drought. During the light spell of drought at the end of last summer scores of thousands of sheep and cattle had to be transported from the dry districts to those where a rainfall had occurred and much loss to the country would have been saved if some system of cross railways had existed affording more direct

communication between the grazing areas. This is generally recognised now, and will possibly lead to additional railway development in the near future.

Some interesting comments were recently made by Mr. Henry Deane, the Past President of the Royal Society of New South Wales, on the subject of Australian railway construction. Dealing with the question of gauges and cheapness in regard to construction Mr. Deane balanced the narrow-gauge system with the standard gauge in favour of the latter where the country was flat and easily dealt with, but he allowed that the advocates of narrow gauge had more in their favour when mountainous country had to be overcome. Sharp curves were permissible on branch lines, such as that from Clarence to the Wolgan, which in a length of 32 miles rose from 3,700 feet at the junction with the Western line to 3,960 feet at seven miles, and then dropped to 2,200 feet above sea level. The line was on standard gauge, and while very substantial, was cheap. For such systems something more flexible than the English-made locomotives was necessary, and in providing these the Americans had shown more ready adaptability to requirements.

Question of
Gauges.

When dealing with details of railway construction Mr. Deane regretted that the American style of rolling stock, with automatic couplings, had not been adopted, and he said that the tendency in England and Europe was now to abolish buffers and introduce the automatic appliances.

There was no question, Mr. Deane considered, that the unification of gauge would have to be faced in Australia sooner or later, but with the present traffic it had not become a really serious matter. The chief inconvenience was experienced in the journey between Sydney and Melbourne. The time would come when travellers would expect to travel without the long waits now necessary at the changes of gauge, and this would be a more pressing demand when the railway systems of the State were joined up with Perth.

During the past six years Australia has imported engines and boilers, railway and tramway rolling-stock and miscellaneous machinery and supplies in connection with railway work and railway industries about

Australian
Imports.

£5,000,000 worth of goods, of which it is estimated that about £1,500,000 worth were purchased in the United States, £250,000 worth in Germany, £60,000 worth in Belgium, and the balance, with the exception of a negligible quantity from other foreign countries, in the United Kingdom.

Rolling
Stock
Orders will
decrease.

While there must always be a considerable market in Australia for railway materials and supplies, I am confident that there will be a steadily decreasing demand for locomotive engines, rolling stock and railway machinery. The various State Governments are determined to encourage local industries, and there is no doubt that the engines and carriages of Australian manufacture are of a high standard and finish.

Local
Engineering
Shops.

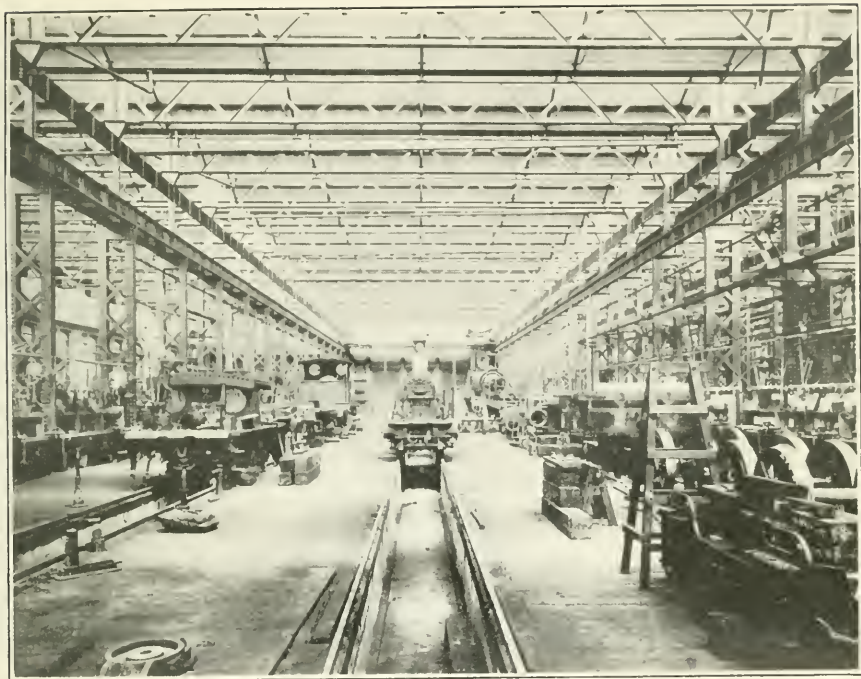
I was surprised at the fine equipment of the engineering shops of the State Railways and private firms and at the high character and wide range of the work that they turned out. In connection with local industry it must be remembered that although the Australian mechanic demands a high wage, he is an energetic and efficient worker, and this makes it possible in many cases for works to build locomotives at prices per ton which will compare favourably with British work, notwithstanding the comparatively small output of the local works.

On the other hand, orders are now being placed locally, quite apart from the question of the price at which rolling stock can be imported. The fact is, that the States are determined to spend their money in wages locally, even if a portion has afterwards to be returned in the form of increased taxation.

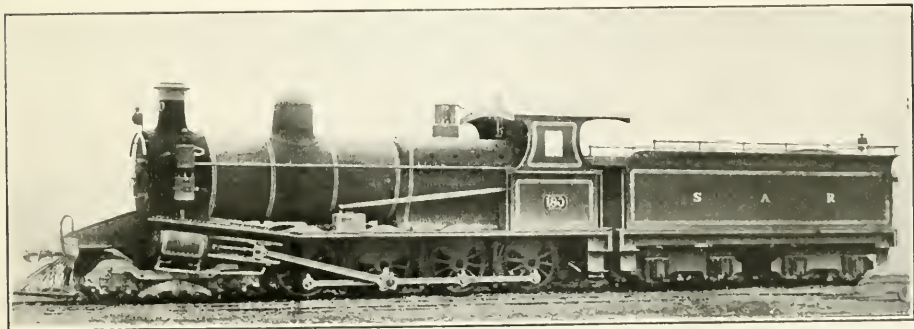
Victoria now builds practically all her own locomotives and other rolling stock, and South Australia and New South Wales will be able to supply their full requirements locally within the next few years, while Queensland and Western Australia though not so advanced as the others in this class of work, are making very serious efforts to deal with it.

Imports of
Materials.

The quantity of rails, fish-plates, bolts, tie-plates, switches, points, crossings and intersections for railways and tramways purchased in 1907 amounted in value to £627,741. The extent of the foreign share of this trade in 1907 was not ascertainable when this report was



VIEW IN THE MIDLAND JUNCTION LOCOMOTIVE ERECTING SHOP, WESTERN AUSTRALIA.



8-WHEEL COUPLED GOODS LOCOMOTIVE, 3' 6" GAUGE, BUILT IN THE GOVERNMENT WORKSHOPS, SOUTH AUSTRALIA.

THE RAILWAY INDUSTRIES OF AUSTRALIA.

written, but in 1906 Great Britain contributed £132,522, Belgium £95,939, United States £75,144, Germany £36,575, and the Netherlands £255. Coincident with increasing railway development and the rapidly growing railway engineering industries imports of the foregoing materials and iron and steel bars, rods, plates, sheets, &c., are steadily increasing. The latter items are dealt with under another heading of this Report. (See page 146.)

WESTERN AUSTRALIAN RAILWAYS.

The Premier of Western Australia, the Hon. N. J. New Lines. Moore, in a recent speech said the new railways authorised in that State are :—Mount Magnet to Black Range, 93 miles ; Port Hedland to Marble Bar, 115 miles (tenders for the supply of rails for these lines have already been accepted) ; Newcastle to Bolgart, 23 $\frac{3}{4}$ miles ; Pinjarrah-Marrenup, 15 miles ; Bridgetown-Wilgarup, 22 miles ; Upper Chapman, 30 miles ; total 298 $\frac{3}{4}$ miles. The railway construction policy of the Government for the immediate future includes the following lines :—Nannine - Meekatharra, Goomalling-Wongon, Boyup-Kojonup, Wagin-Darkan, Beverley district railway, Dowerin extension eastward, Narrogin-Wickepin to eastern railway, railway facilities to those fertile areas to the east of Katanning and Broomehill, a total of over 400 miles.

The State railway workshops of Western Australia are very busy at the present time. At the time of my visit a programme of works was in progress, the total of which involved a sum of £130,600, and this amount does not include several of the works referred to in the following pages. The items were principally made up of rolling stock and included :—

West
Australian
Industry.

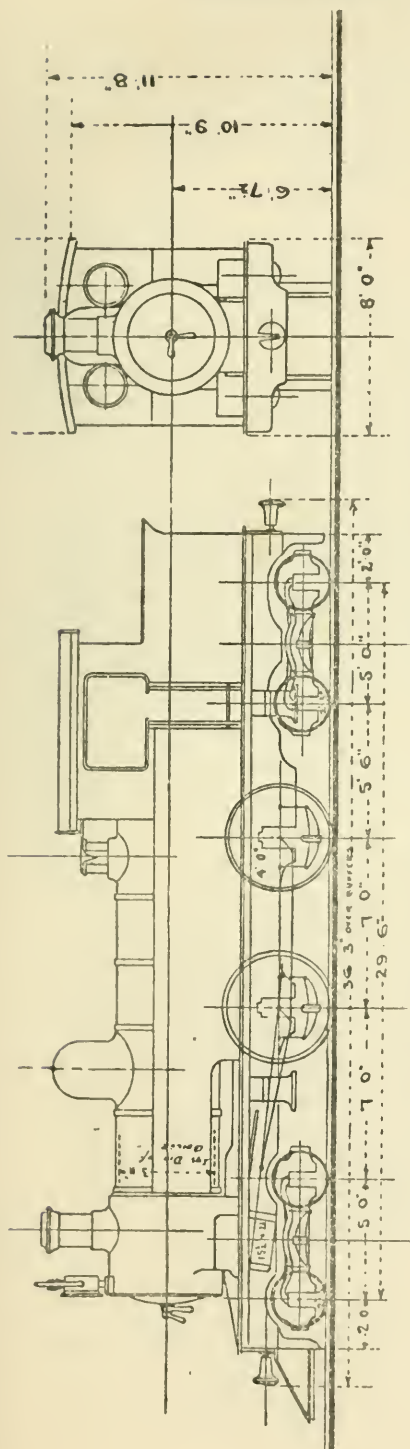
—	Cost of each imported.	Cost of each made locally.
	£	£
30 covered goods, 4-wheel -	210	158
25 sheep trucks, 4-wheel -	197	118
25 cattle trucks, 4-wheel -	202	131
10 three-stall horseboxes, 4-wheel	600	349
2 bank inspectors' cars, bogie -	None imported.	556
5 cold storage, 4-wheel -	300	284
5 powder vans, 4-wheel -	250	227
1 bullion van, bogie -	None imported.	1,003

This programme was rapidly approaching completion, and further works were in view in the construction of additional railway carriages, &c.

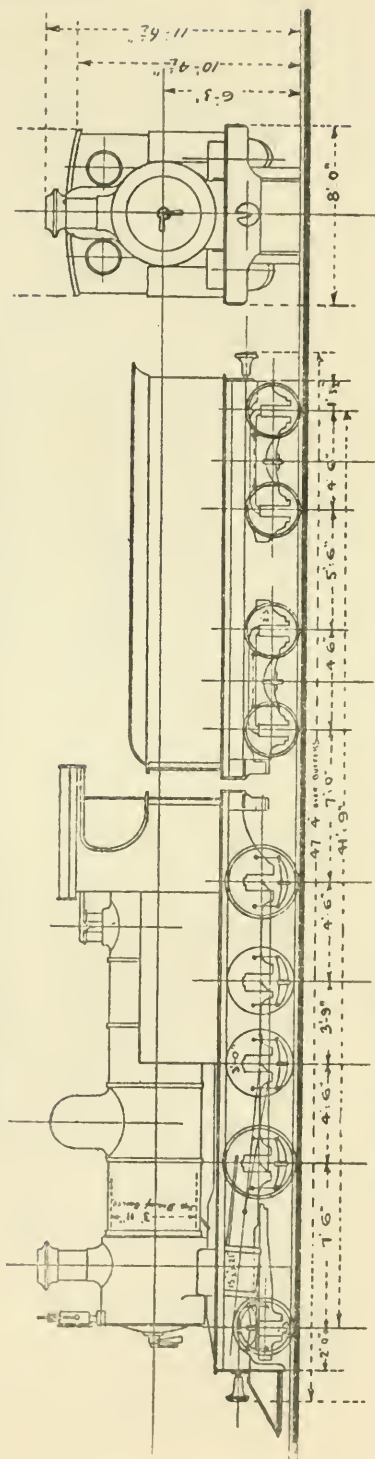
The figures given above were supplied to me by the Chief Mechanical Engineer, and, without knowing the basis on which they were calculated, cannot, of course, be regarded as conclusive evidence of the cheapness of local production as compared with purchasing abroad.

Interesting
Conversion
Work.

The "N" Class locomotive (here illustrated by an outline drawing) has proved particularly serviceable for suburban traffic, and additional stock of this class was necessary. The "N" are 4-wheel coupled tank engines with 4-wheel bogies leading and trailing, 4-feet diameter coupled wheels, and a tractive power at 160-lbs. boiler pressure of 12,610 lbs. A considerable number of the "O" Class (also illustrated) were not in use; but were not suitable for this kind of traffic, being 8-wheel coupled bogie tender engines, with 3-feet diameter coupled wheels, and a tractive power of 16,810 lbs. at 160 lbs. boiler pressure. In these circumstances the Chief Mechanical Engineer decided that 10 of the "O" Class should be re-modelled, and made duplicate with the "N" type. Engine frame plates, cast-steel coupled wheel centres and tyres, steel blooms for axles, cast-steel horncheeks and axle boxes, bogie frame plates, and bunker and side tank plates, all in the rough, were ordered; the remainder of the material required in the modifications being either cast or forged in the workshops, or adapted from the discarded "O" Class material. The "O" and "N" Class locomotives were originally obtained from the same makers, and the boiler, cylinders, motion work, and certain minor parts were duplicates; therefore in every feature of importance, the altered engines were identical with the original "N" Class. The engine frame plates were straightened in large rolls, and one plate was marked off and completed for use as a template. The manner in which these plates were manipulated is interesting. After being marked off from the template, they were first punched to within $\frac{1}{4}$ -inch of the finished size all round; they were then taken to a large vertical miller and milled to the finished size in lots of two pairs at a time. The average time occupied in completely milling two pairs



WESTERN AUSTRALIAN RAILWAYS. "N" CLASS LOCOMOTIVE FOR SUBURBAN TRAFFIC.



WESTERN AUSTRALIAN RAILWAYS. THE "O" CLASS BEFORE CONVERSION TO THE ABOVE TYPE.

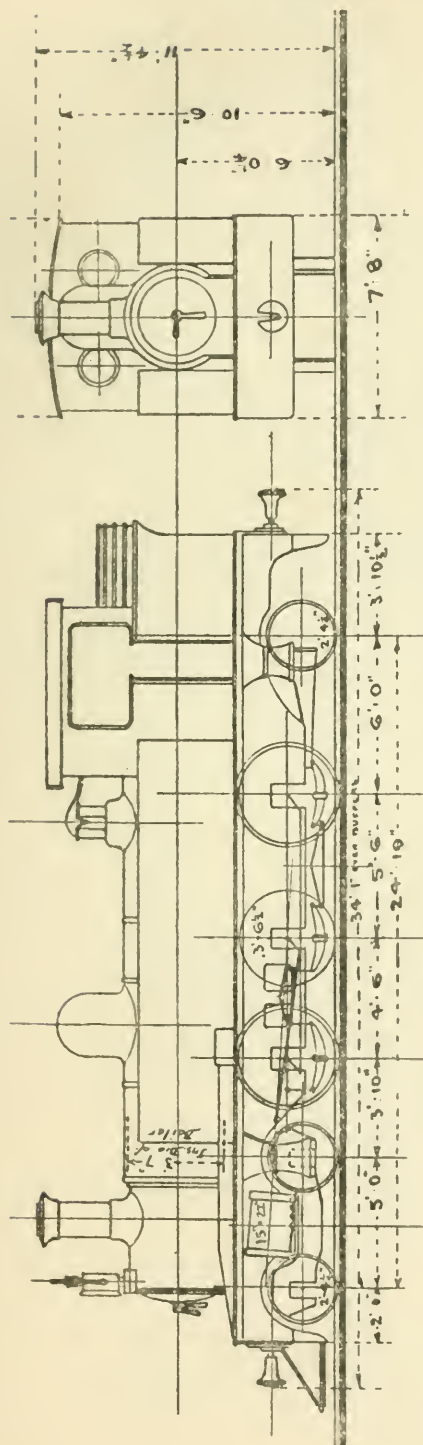
was about 40 hours ; the plates were then drilled, and so thoroughly and accurately was the machining done, that scarcely any hand fitting was required. Several of the remodelled engines have been in traffic for some time and given entire satisfaction.

Six tank locomotives of the "Q" Class (also illustrated) were in service, but were not satisfactory in operating either passenger or goods traffic, and were not required for other purposes. The engines in use on the Upper Darling Range Railway (a line consisting of a series of 1 in 30 grades and curves of 5 chains radius) not sufficiently powerful for the work, besides being otherwise unsuitable, and the Chief Mechanical Engineer decided that one of the "Q" engines should be modified and adapted for use on this particular railway. A new boiler with "Wootton" type firebox with special combustion chamber at front, and of greater steaming capacity, and a 4-wheel trailing bogie in lieu of 2-wheel, were the principal alterations to be made. The altered locomotives were classified "QA" (*see* illustration), and the first one was put into use on the Upper Darling Range Railway in October 1905. It very satisfactorily performed the duty required on this line, and has proved also to be an economical and powerful machine for operating moderate speed passenger trains on main line traffic. Three more of the "Q" engines are being altered at the present time for general use on mixed service, the remaining two to be retained for shunting work.

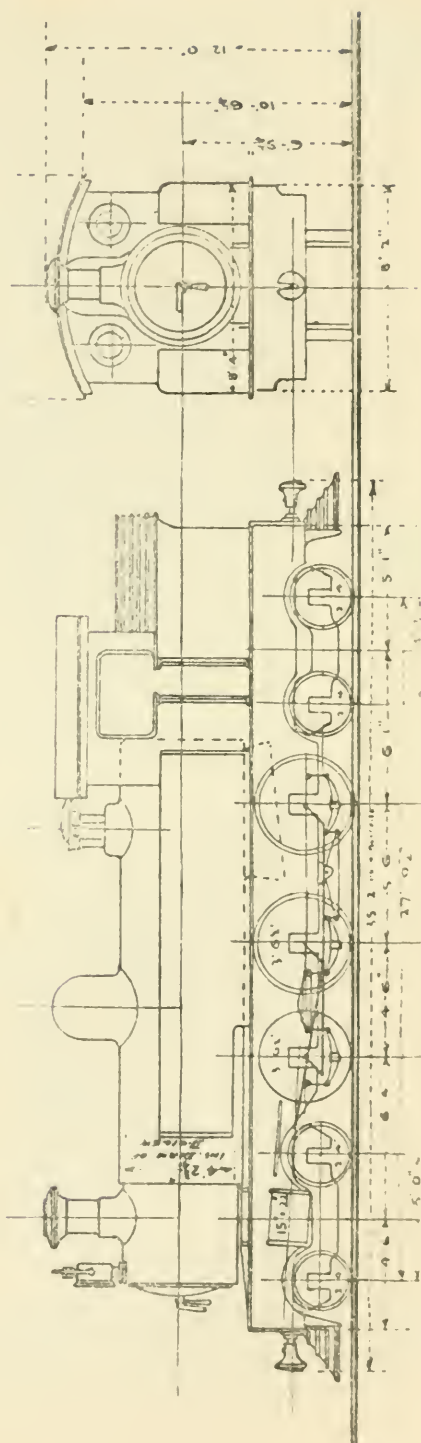
Corridor
Sleepers.

Nine first-class corridor sleepers (*see* illustration) and nine second-class corridor carriages were imported in 1904. Recently tenders were called locally for twelve of each type, and the contract was divided between the State Railway workshops and a private firm, the former building five and the latter seven of each class. The prices quoted for these vehicles were as follows, from which it will be seen that construction locally was undertaken without consideration of price :—

First Class.			Second Class.		
Imported.	Local Firm.	Railway Dept.	Imported.	Private Firm.	Railway Dept.
£ 3,268	£ 3,780	£ 3,627	£ 2,569	£ 2,901	£ 3,131



WESTERN AUSTRALIAN RAILWAYS. "Q" CLASS LOCOMOTIVE CONVERTED AS BELOW.



WESTERN AUSTRALIAN RAILWAYS. THE "Q^A" CLASS WHICH REPLACE ABOVE TYPE.

Supporting
Local
Industry.

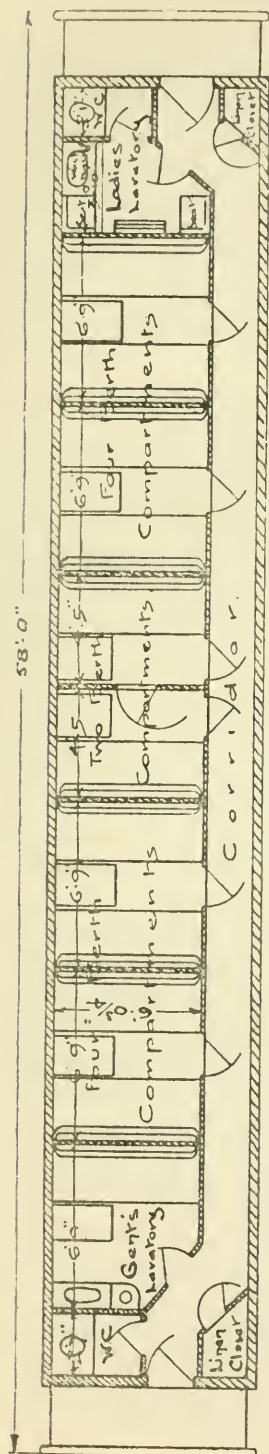
The cars now under construction (*see* diagram of first class carriage) are much lighter than those imported, although the carrying capacity is the same. The decrease in weight amounts to 41 cwt. per first class coach and 33 cwt. per second class coach, and has been secured by abandoning the separate steel underframes and combining the timber underframe with the car sides to form a truss which is arranged to transmit the weight directly to points over the bogie centres. The accommodation of the new cars will be equal to the others now running, but a better arrangement of the lavatory and adjuncts brings the end doors to about the centre of the platform instead of at the side, while those using the smoking compartment will be more comfortable than before.

Interesting
Bullion
Van.

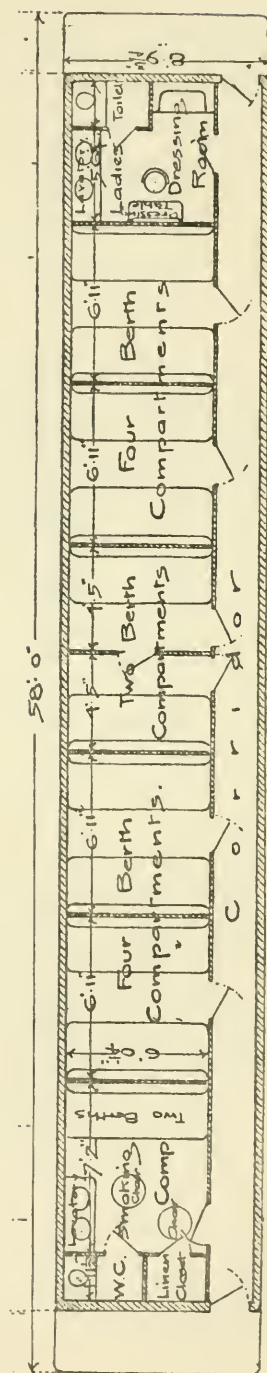
Bullion has hitherto been carried on the railways from the Kalgurlie and other goldfields in a 4-wheel vehicle specially designed for the purpose, but the accommodation for the escort officers was very scanty and uncomfortable. The vehicle was frequently found to be deficient in carrying capacity, and it was considered advisable not to run 4-wheel vehicles lightly loaded on express passenger trains. It was therefore decided that a bogie vehicle should be built in the Midland Junction workshops for the Kalgurlie bullion traffic, and this car is now approaching completion. The design of the safe is similar to that in use, but is of larger capacity, being 13 feet 6 inches by 3 feet by 6 feet in place of 9 feet by 3 feet by 6 feet; both are built entirely of steel and are securely riveted to the underframing. This car is electrically lighted, and berth accommodation is provided. The safety devices adopted render access to the safe by other than authorised persons almost an impossibility. Unlocking the safe puts into operation a valve in the vacuum brake system, and therefore any attempt to tamper with the safe while the train is in motion would apply the brake and at once bring to the escort the necessary assistance.

Shop
Equipment.

The West Australian Government Railway workshops are fitted with the most modern machinery for economically and expeditiously carrying on their work.



WESTERN AUSTRALIAN RAILWAYS. PLAN OF CORRIDOR SLEEPING CARRIAGE AS CONSTRUCTED LOCALLY.



WESTERN AUSTRALIAN RAILWAYS. PLAN OF CORRIDOR SLEEPING CARRIAGE AS IMPORTED FROM GREAT BRITAIN.

Electric driving (where possible) has been adopted throughout, but it is to be regretted that the bulk of the electrical machinery and a great part of the machine tools and wood-working machinery is of foreign origin. Some of the wood-working machinery used is of a special and patented character and at present only obtainable in America, but [the bulk of the machinery obtained from abroad could have been equally well, if not better, purchased from Great Britain—except, perhaps, for a slight difference in the price.

It is a pleasure to walk through such fine shops in a new country so far removed from the world's centres of manufacturing industry. These works are a monument to the progressive spirit and thoroughness of the Government of this Colony. No capital expense has been spared to make these shops economically productive of good work, and great credit is due to the Chief Mechanical Engineer for the successful way in which the many details have been worked out. I propose to refer briefly to a few of them.

Interesting
Locomotive
Weighbridge.

It was originally intended that Fairbanks Locomotive weighing machines should be placed on the rails in the erecting shop, and the engines when ready for the road should be lifted upon them by the 30-ton electric overhead cranes. The present Chief Mechanical Engineer viewed this arrangement with much disfavour on account of its inconvenience, and instructed that the machines should be placed in a special building, the weighing to be done at nominal rail level. The underground setting was therefore prepared and the bridges are now utilized for obtaining the weight on each wheel, adjusting the springs and obtaining the vertical centre of gravity of locomotives with the boiler filled with water to working level. The latter information is obtained by first weighing the engine when standing on the level, then dropping one side of the weighing apparatus 3 inches (which is done electrically), then taking carefully by measurement the angle at which the engine stands and the difference in weight on the wheels due to the cant. The centre of gravity is then calculated from the data thus collected.

Quite recently a plant has been installed for reclaiming waste and oil after use in wagon axle-boxes, and in running sheds, workshops, &c. The separating machine is of the centrifugal type, and will deal with about 28 cubic feet of material per day of 8 hours at 4 cubic feet per charge. During the month of January of this year, operating on a bulk collection of refuse oil from wagon axle-boxes, and waste from running sheds, &c., with one attendant only, the output was as follows :—

Oil-Saving
Apparatus.

	£	s.	d.
720 gallons oil reclaimed at 1s. 2d.			
per gallon - - -	42	0	0
3,055 lbs. waste at 2½d. per lb. - -	31	16	5
	<hr/>		
	£73	16	5
Cost of operating—27 days at 10s. -	13	10	0
	<hr/>		
Total saving for month -	£60	6	5
	<hr/>		

The waste after leaving the machine is passed through a hair teaser, belt driven at a slow speed, and is then fit for use without further treatment. For use in axle-boxes it is quite equal to new material. The machine has 8 cubic feet capacity and cost £175 f.o.r. Fremantle.

The system of storing coal in bulk at depôts until the last two years has been to unload from trucks on to low level stages by hand, and baskets were filled on the stages and emptied into the engine or tender bunkers also by hand. This was a cumbersome system, and the Chief Mechanical Engineer decided that a trial should be made at one depôt of the “grab” system of “coal handling.” A crane of 3-ton lifting capacity was fitted with the necessary rigging, and a “grab” to hold 10 cwt. of coal was made in the railway workshops and put into use. A high-level storage bin was erected and the crane was placed on rails on top of the low-level stage, and, being portable, was capable of unloading direct from trucks into tenders or into the bin as required. The bin is provided with shoots arranged to direct the coal straight into the bunker without handling of any kind other than

The System
of Coal
Handling.

a little trimming. This manner of coal handling has proved eminently successful, and an all round economy is the result, fuelmen at the trial depôt being reduced from six to two; the wages being decreased by £563 per annum. The use of the grab avoids the necessity of erecting overhead stages, which costs from £6,000 to £7,000 and makes the coaling appliances more portable, which is very necessary in a rapidly-growing railway system. Fifteen tons per hour can be handled by the use of a half-ton grab, and this amount would require six men to move by hand.

Education of
Apprentices.

Another matter I might briefly refer to is the liberal way in which apprentices are treated in matters of education. Prior to 1905 the State Railway workshops were situated at Fremantle, and the workmen and apprentices had their homes in the vicinity of the works, and the technical education of the lads was provided by the Education Department by means of evening classes. During 1905 the works were removed to their present site at Midland Junction, 22 miles distant from Fremantle, and the apprentices, numbering just on 100, are located anywhere between the two places mentioned. It was now most difficult to arrange evening classes to permit of these lads attending regularly, and the greater number of them have been wasting their evening time. The Chief Mechanical Engineer has devised a system whereby each apprentice in the works will receive four hours' tuition in technical subjects per week, and the time spent in class will be paid for as ordinary time by the Department. Boys have as a part of their ordinary duty to attend twice a week at 7.30 a.m. at a class room within the railway premises to receive instruction for two hours; they then proceed to their respective duties in the works. The total number of lads are divided into three sections, classed Elementary, Secondary, and Advanced, and the subjects to be taught are Arithmetic, Geometry, Algebra, Applied Mechanics, Steam and the Steam Engine, Electricity and Mechanical Drawing. During the term of a lad's apprenticeship he will be expected to pass examinations in each of the stated subjects, and the examinations will

be conducted and certificates awarded by the Technical Education Department, and the certificates will therefore have the same value as those gained by students directly connected with the Technical Schools. A considerable outlay is involved in the first instance, but the Department expect to be recompensed in the more intelligent workmen these lads will become, and therefore the higher class work they will be capable of doing. A Board has been appointed, consisting of the Works Manager, Chief Draughtsman, Chief Clerk, and a nominee of the Director of Technical Education, to conduct affairs connected with these classes, and it is expected that the youths will benefit greatly by the consideration extended to them. Up to the present everything appears to point to the scheme being a great success.

SOUTH AUSTRALIAN RAILWAYS.

The mileage of existing South Australian railways is 1,878 miles. The total cost has been about £14,000,000, and the revenue for 1906-7, £1,575,368. The net revenue, after payment of working expenses and interest on capital cost of construction, is £227,463. The net revenue percentage returned on capital cost was 5·16 per cent., the best result obtained in any of the States.

New railway lines recently approved by Parliament to be constructed forthwith, the surveys for which are now in hand, and arrangements made for early construction include: (1) Extension of the Port Lincoln and Cummins Railway over a distance of 10 miles to the newly settled lands in the Hundred of Shannon and neighbourhood. Gauge, 3 feet 6 inches; estimated cost, £20,000. (2) Laura to Booleroo Centre, a distance of 24 miles. Gauge, 3 feet 6 inches. This extension is to give additional facilities to a populous settled farming district. Estimated cost, £82,500. (3) Gawler to Angaston, distance of 24 miles. Gauge, 5 feet 3 inches. This extension is to give greater facilities to a densely populated district of wine growers and manufacturers, fruit growers, farmers and sheep farmers.

Extent and
Position.

New Lines.

Local State
Production.

The Government railway engineering shops are situated at Islington, where a quantity of new machinery has recently been installed, and in addition to the carrying out of ordinary repairs during the past year a large quantity of rolling stock has been constructed and issued to traffic, including three Class "T" 3 feet 6 inches gauge engines and tenders. Five Class "Y" 3 feet 6 inches gauge engines have also been rebuilt and modernised. Among the stock under construction during the past year were six second-class carriages for the Adelaide-Melbourne express service.

Private Roll-
ing Stock
Building.

A contract for ten locomotive engines, at a cost of £46,145, has recently been let to a private local firm, Messrs. Martin & Co., of Gawler, and another for 100 wagons of Class "X" for £10,477.

Automatic
Continuous
Brakes
wanted.

In his 1906-7 Report, the Railways Commissioner states:—"I cannot too strongly call attention to the want of an automatic continuous brake for all classes of rolling stock, and would again urge that immediate steps be taken to provide me with funds to complete this work."

VICTORIAN RAILWAYS.

Mileage of
Track.

There are about 4,224 miles of track of 5 feet 3 inch gauge, and 86 miles of 2 feet 6 inch gauge in Victoria, making a total of 4,310 miles.

An
Important
Industry.

Quite an important industry in Victoria is the Government Locomotive and Railway Carriage and Wagon Works at Newport, where, in addition to building practically all the new rolling stock required for this system, an immense amount of repair and renewal work is done each year. The following is a record of some of the work carried out in the Newport shops for the year ending June 1908.

New
Locally-
built Rolling
Stock.

The following new rolling-stock, built at the Newport workshops, was put into service during the year:— 12 locomotives; 21 carriages; 26 van and sundry; 240 trucks (additional and replacement). In addition eight electric tramcars were provided for the St. Kilda-Brighton Electric Street Railway, the bodies of which were constructed at the Newport workshops. There are now on this line ten combination motor cars, and



THE MELBOURNE-SYDNEY EXPRESS.
A FAST AND LUXURIOUS TRAIN BUILT THROUGHOUT IN THE VICTORIAN RAILWAY WORKSHOPS.

seven open and four closed trailer cars, making a total of twenty-one cars. Up-to-date equipment of a similar type to that provided for the Melbourne-Albury express service, consisting of six first class, six second class, and four sleeping cars (each 71 feet long), and two mail sorting vans, one mail baggage van, and four luggage vans (each 60 feet long), was completed and put into use during the year on the Melbourne-Adelaide express trains. Of this stock the six second class cars and the four luggage vans were built by the South Australian Railways at the Islington workshops. One mail baggage van 60 feet long was also provided for the Melbourne-Albury service during the year. Forty-five 71-foot cars of a similar type to the new express stock above referred to are under construction for use on some of the principal country trains; eighteen of these will shortly be put into running. Ten combined smoking¹ cars and vans for suburban service were completed and put into use during the year. Three 71-foot dining cars for service on the Melbourne-Albury and Melbourne-Adelaide express trains are in hand, and one of the sleeping cars released from South Australian joint stock service is being converted into a sleeping and dining car for use on the Mildura line. Ten 71-foot combined mail sorting vans and second class cars, specially designed to meet the requirements of the Postal authorities, and ten 60-foot luggage vans are also being provided for the principal country services.

It has been decided that the best way to provide the additional carriage stock required by the Melbourne suburban traffic is to lengthen the 45-foot bogie suburban carriages by two compartments each, making them 57 feet long, at the same time strengthening and otherwise improving the bogies, underframes, &c. Four carriages so altered during the year have proved very satisfactory. These lengthened and strengthened carriages will be suitable for electric trains should the suburban lines be electrified, and as additional suitable carriage accommodation for the suburban traffic is much needed, not only to deal with the increasing business, but for the replacement of the old short fixed wheel base stock in ordinary service, this work of lengthening and improving

Carriages
lengthened.

the 45-foot bogie suburban carriages should be proceeded with as fast as the funds can be made available and the capacity of the shops will permit.

New Locomotives.

The construction of locomotives at the Newport workshops has been continued, and nine locomotives for passenger and goods service ("DD" class), one heavy suburban locomotive ("DDE" class), one heavy express passenger locomotive ("A2" class), and one narrow gauge locomotive, were completed and put into use during the year, making a total of fifty-six locomotives constructed at Newport since 1903.

New Class of Engine.

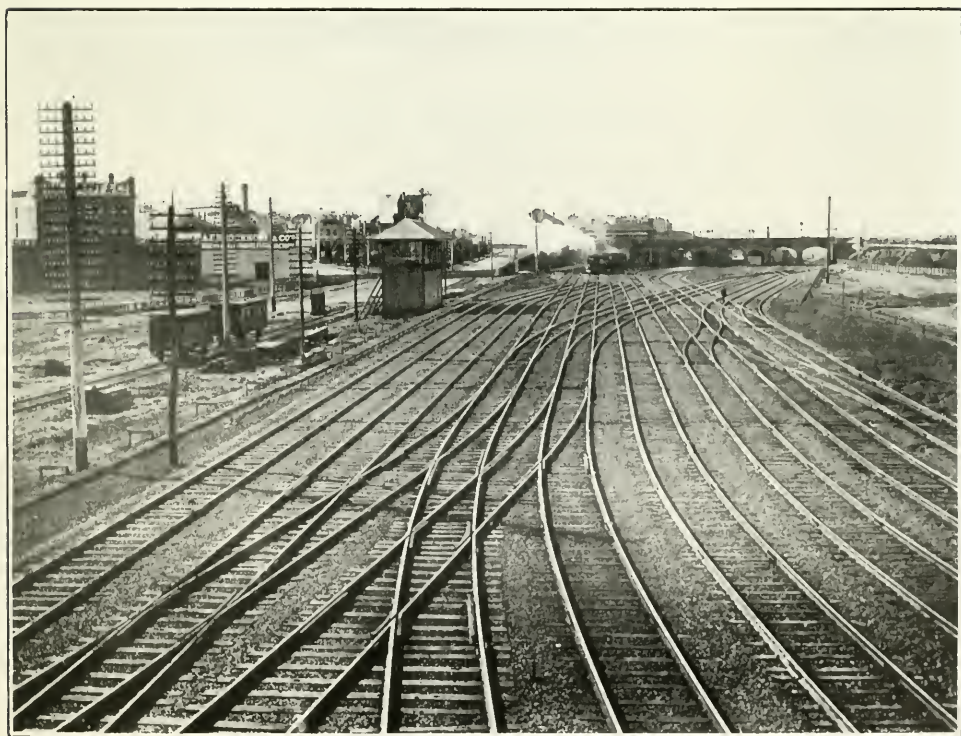
It has been found necessary to construct passenger locomotives with considerably increased power to provide for the continued expansion of the express and other passenger traffic, so as to obviate the necessity of using two locomotives to draw the heavier trains. The pattern locomotive of the "A2" class, which had been designed for this traffic, was completed and placed in running in December last, and has proved satisfactory in every way. Nine more locomotives of this class are now under construction, and five of them are expected to be running in December 1908. It is proposed that thirty of these locomotives should be provided.

Repairs, Renewals, and Additions.

During the year fifty new boilers of increased capacity were constructed at Newport and fitted to locomotives, in addition to twelve made for new locomotives. 139 trucks were equipped with the Westinghouse brake during the year, and the total number so fitted at the 30th June 1908 was 9,262, or 86 per cent., and with brake-pipes 1,558. Forty carriages were equipped for Pintsch gas lighting during the year, and the total number so equipped at 30th June 1908 was 930, or 74 per cent. The use of incandescent mantles on Pintsch gas lamps in carriages has been continued with satisfactory results, and 220 carriages have been equipped during the year with these mantles in addition to the Melbourne-Albury and Melbourne-Adelaide express trains. It is anticipated that 300 additional carriages will be fitted with these mantles during the year 1908-9.



45-TON CAPACITY WHEAT TRUCK.



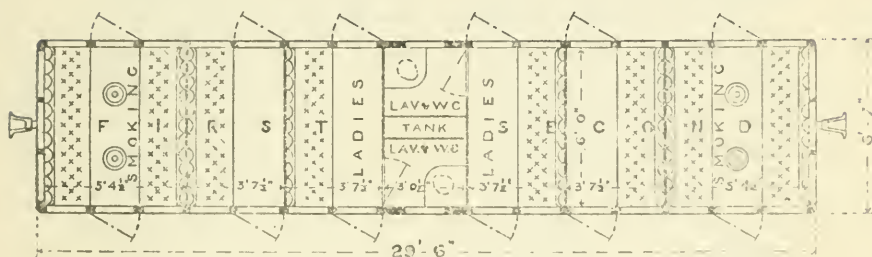
A BUSY SECTION OF THE MELBOURNE SUBURBAN RAILWAYS.

THE RAILWAYS OF VICTORIA.

An illustration is here given of the Melbourne-Sydney express, a luxurious high-speed train, built entirely in the workshops of this State. The principal dimensions of the locomotive are as follows:—Length over buffers, 61 feet 3 inches; heating surface of boiler 2,220 square feet; wheel base, 52 feet 0 $\frac{1}{8}$ inch; steam pressure, 200 lbs. per square inch; grate area, 29 square feet; cylinders, 21 inches in diameter by 26 inches stroke; driving wheels, six coupled, 6 feet in diameter; fuel capacity of tender, 5 tons; water capacity of tender, 4,600 gallons; total weight of engine and tender in steam, 109 tons.

Melbourne-Sydney Express.

The train consists of two first class, one composite first and second, two second class carriages, and a luggage van, at the rear of which is a magnificent



VICTORIAN RAILWAYS.—NEW LOCALLY-BUILT COMPOSITE CAR FOR
2 FT. 6 IN. GAUGE LINES.

parlour and observation car. Each of the carriages, including the parlour car, is 71 feet in length, and the luggage van 60 feet; and through the train from engine to van runs a wide corridor, carried from one vehicle to the next by a broad gangway and a spacious vestibule. The floors are double, and stuffed with hair, which deadens sound and renders them warm in winter. The ceilings are of steel, stamped to special design. The compartments in both first and second class carriages are roomier and loftier than any yet run here.

In order to keep pace with the carriage building, it has been found necessary to considerably enlarge the carriage shop at Newport, and the area of this shop is now more than double what it was a few years ago.

The Newport Works.

Practically the whole of the iron, steel, and brass

castings for the Rolling-stock Branch, as well as for the Way and Works Branch, are now made at Newport, and this has necessitated a large extension of the foundry, the output of which is now at the rate of 250 tons of castings per month.

Considerable additions have also been made to the forge, a further large steam hammer having been erected and provision made in this building for the extensive nut, bolt, and rivet-making machinery. The forge turned out 2,538 axles during 1909.

The increasing work at the Newport shops has also made it necessary to provide a considerable addition to the blacksmith's shop, to re-arrange and add to the sidings and turntables, to increase the motive power, and also to provide a further number of modern labour-saving machines, all of which are in progress.

Supply of
Steel Rails.

Tenders invited locally in 1907 for 8,485 tons of 80-lb. and 100-lb. rails resulted in the order being placed with Messrs. R. W. Cameron & Co., of New York, for that quantity of rails—manufactured at the Lorain Steel Mills, Ohio, at £6 17s. per ton—delivered into Departmental trucks at Williamstown Pier, exclusive of duty. Delivery of these have nearly been completed. A further contract for 55 miles of 80-lb. rails have been placed with the same firm at £6 3s. 6d. per ton.

The new Walhalla and Tocumwal lines have recently been open to traffic, and work will shortly be commenced on the Alexandra township railway, the Rupanigup to Marnoo line (15½ miles), the Nyora to Wollomai line (176 miles), and the Ultima to Chillingollah line.

NEW SOUTH WALES RAILWAYS.

A Well-
Conducted
System.

The New South Wales Government Railways had 3,472½ miles of line open for traffic on the 30th June 1908. This is undoubtedly one of the best conducted systems in Australasia, and I do not hesitate to say that from an engineering as well as an administrative standpoint it will compare favourably with the best British lines. The gauge is 4 feet 8½ inches, and, considering the sparsity of the traffic on some of

the sections, the financial results achieved are quite remarkable and reflect the greatest credit on the Commissioners. The following table deals with a few features of the system for the year which ended in June 1908:—

RESULTS OF WORKING, 1907-8.

Amount expended on construction and equipment	- - -	£45,683,484
Cost per mile open for traffic (including workshops, rolling stock, &c.)	- - - -	£13,156
Total miles open for traffic	- -	3,472½
Average miles open for the year	-	3,468¾
Earnings	- - - -	£4,944,134
Working expenses	- - -	£2,714,839
Balance (after paying working expenses)	- - - -	£2,229,295
Percentage of profit to capital invested	- - - -	£4 17s. 7d.
Percentage of working expenses to earnings	- - - -	54·91
Earnings per average mile open	-	£1,425
Working expenses per average mile open	- - - -	£782
Earnings per train mile	- -	6s. 11¼d.
Working expenses per train mile	-	3s. 9¾d.
Number of passenger journeys	-	47,487,030
Goods tonnage	- - -	9,719,840
Live-stock tonnage	- -	455,549
Train mileage	- - - -	14,251,052

An immense amount of new railway work is proceeding in this State, and the following new constructional work has actually been decided on:—A north coast railway of a length of 310 miles; Narromine to Peak Hill Railway, 35 miles 73 chains in length; and Lockhart to Clear Hills Railway *viâ* Boree Creek and Urana, in length 50 miles 40 chains.

In addition the following works are projected:—Cowra to Canowindra and Grega; and Coraki to Kyogle *viâ* Casino.

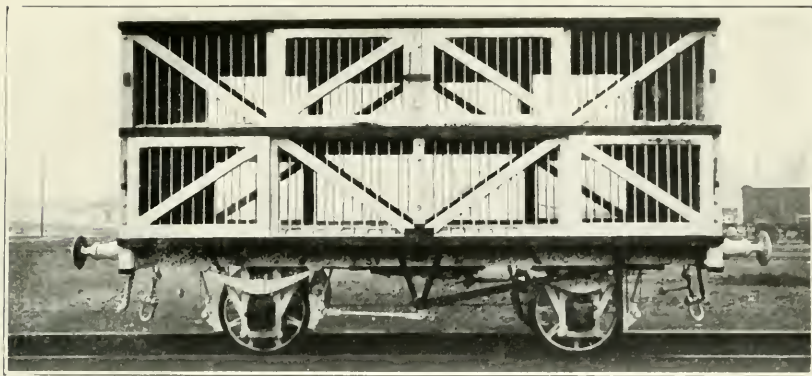
The Minister of Works of the New South Wales Government recently stated that when the Murrumbidgee irrigation scheme is completed in about three years' time, a line would also be constructed from the southern side, about 50 miles from Hay, and also one from the Barrellan side, each to traverse the irrigation area.

The N.S.W.
Rolling
Stock.

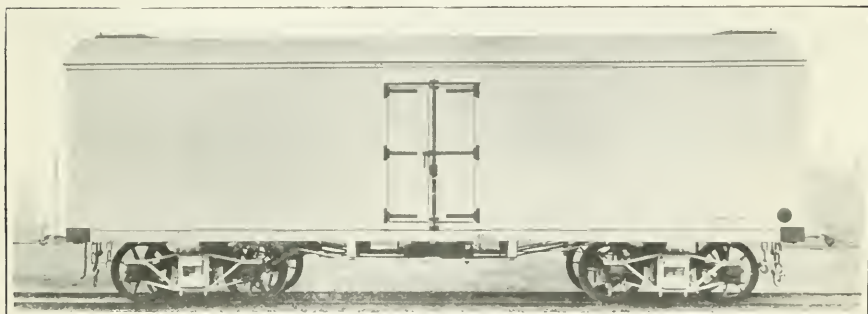
Illustrations are here given of some types of passenger and goods locomotives, being built in the Government railway shops at Redfern and by the Clyde Engineering Co., Ltd., of Sydney, who are at present engaged on 75 engines for goods and passenger traffic. The passenger locomotive has driving wheels 5 feet in diameter, three-coupled on each side with a front four-wheel bogie 3 feet 3 inches diameter wheels. The cylinders, which are placed outside the frame, are 20-inch by 26-inch stroke ; the boiler has a total heating surface of 1,916 square feet and a total grate area of 27 feet, giving a boiler pressure of 100 lbs. per square inch. The weight of the engine and tender is 98 tons. The locomotive for goods traffic has eight driving wheels coupled. The cylinder diameter is 21-inch by 26-inch stroke, and the total boiler heating surface 2,198 square feet, with a grate area of 29 $\frac{3}{4}$ square feet, giving a boiler pressure of 160 lbs. per square inch. The total weight of this engine and tender is 107 tons. Practically the whole of these engines throughout are built in the shops of the Clyde Engineering Company and those of the Government at Redfern, only the axles and tyres and some materials, and a few of the mountings, being imported. It will surprise many engineers in this country to find that such important heavy work can be successfully produced in Australia. Ten more of the "P" class passenger engines illustrated will be delivered by the Redfern shop within the next few months and a similar number from the Clyde Engineering Works.

The New
Policy.

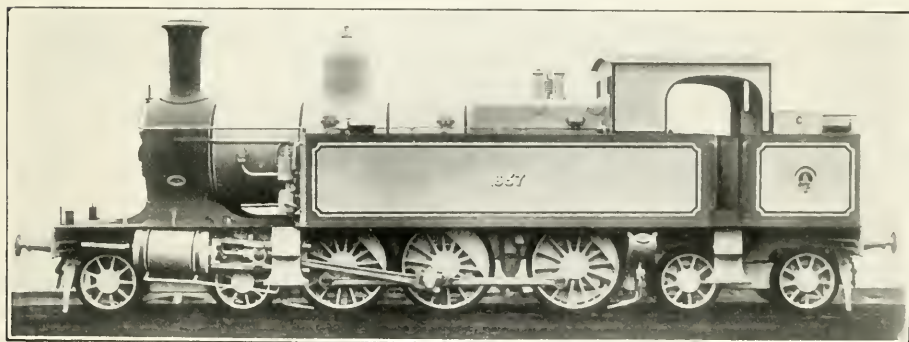
A number of engines on this system by Messrs. Beyer, Peacock & Co. (one for suburban traffic is illustrated herein), are giving excellent working results, but the desire of the Government in future is to build all their rolling stock locally, and it is probable that



TWO-STOREY SHEEP VAN. CAPACITY, 100 SHEEP. NEW SOUTH WALES RAILWAYS.



REFRIGERATING VAN, N.S.W. RAILWAYS. CAPACITY, 540 CHILLED SHEEP OR 675 FROZEN SHEEP.



PASSENGER TANK LOCOMOTIVE FOR THE N.S.W. RAILWAYS, BUILT BY
MESSRS BEYER PEACOCK AND CO., LTD., MANCHESTER.

SOME INTERESTING ROLLING STOCK.

few orders will be placed outside the State, except to meet urgent requirements from time to time.

The following account from the last annual report of the Chief Commissioner of Railways will give some idea of the enormous amount of work handled at the State engineering works at Redfern and Newcastle and by the Clyde Engineering Co., Ltd., and other local firms :—

Extensive
Local
Industries.

Thirty-five new locomotive boilers have been constructed in the Redfern shops during the year. Nine passenger tender engines, 14 goods tender engines, and five goods tank engines were rebuilt and fitted with new boilers. Fifteen "P" class engines and 10 "S" class suburban tank engines were received from England. Four passenger and seven goods tender engines were received from the Clyde Engineering Company. The work on the ten "P" class engines now building in the Redfern shops is progressing satisfactory, and it is expected they will all be in traffic by the end of June 1909, six shunting tank engines, from the duplicate stock, have new boilers fitted to them, and now form part of the permanent stock, 730 engines have had general repairs, 510 of them at Redfern, 80 at Newcastle (including 13 motors), and the remaining 140 at smaller depôts. Two hundred and twenty-seven of them had heavy repairs, and the remaining 503 had general repairs of a lighter character. Five hundred and forty-three locomotive boilers were overhauled during the year, 473 of them at Redfern, 67 at Newcastle (including boilers of 12 motors), and the remaining three at smaller depôts. One hundred and ninety-four of them were internally examined, heavily repaired, re-filled with tubes, and returned to locomotives. Fifty-seven stationary boilers were overhauled, four of which received heavy repairs. Two new stationary boilers and eight old locomotive boilers displaced worn-out plant, and four new vertical boilers were installed at new pumping stations.

Locomotives.

Three new Mann type sleeping cars have been constructed in the Redfern workshops ; two carriage trucks were rebuilt during the year, and the following carriages have been received from contractors :—twelve first-class,

Carriages.

eight composite, and three second-class, all of the lavatory type ; and for suburban traffic, 24 first and 24 second-class cars. One thousand six hundred and nineteen passenger vehicles received general repairs ; 1,257 of them at Redfern, and 362 at Newcastle. One hundred and twenty-four of these were heavily repaired.

Wagons.

The following additional vehicles were received from contractors, viz. : Three hundred coal hopper wagons, 500 steel goods wagons of 15 tons capacity ; 10 four-wheel refrigerator cars, and 29 four-wheel composite goods brake vans. (Some of these were imported.) One workman's van, three open bogie wagons, 26 four-wheel cattle trucks, 10 caboose brake vans, one truck for gas supply, were built in the Redfern shops. Two hundred and eighteen merchandise vehicles, received from contractors, and 19 new ones from the Redfern shops, replaced condemned vehicles. Seven thousand eight hundred and seventy-one wagons and vans passed through Redfern and Newcastle shops during the year ; 3,139 of them were heavily repaired. Two open bogie, and one open four-wheel wagon, two sheep vans, and one refrigerator car, were rebuilt during the year. Two thousand two hundred and eighteen axle-boxes of defective design were removed, and replaced by standard axle-boxes.

QUEENSLAND RAILWAYS.

Total Mileage.

The total mileage of these railways open to traffic at the end of last year was nearly 3,200 miles. The following constructional work is in hand, and some of it approaching completion. Inglewood to Goondiwindi 53 miles, Wetheron to Gayndah 11 miles, Jericho to Blackall 71 miles, and Richmond to Cloncurry 174 miles. The capital invested and the results achieved of this well-managed system are given in a table at the beginning of this section, and need not be further dwelt on here.

Rolling Stock.

There are about 350 locomotives on this system, and about 460 carriages of various types, 7,500 wagons and 120 brake vans.

Local Railway Industries.

There are finely equipped State workshops at Ipswich, where repairs, renewals and additions to engines, carriages and wagons are made. In accordance with the

general policy of the various States an endeavour is being made to provide for all their future requirements locally, and new locomotives are being built as rapidly as possible in the State shops. Contracts to build 20 locomotives have also been let to a private firm, and some of the engines are already working. Contracts have also been let locally for the construction of 200 eight-wheel wagons (the wheels and axles for which have been supplied by British firms), and for other rolling stock required. The following is a list of some of the rolling stock built in the State workshops in 1907 : Two composite lavatory cars, one travelling post office car, six covered goods wagons (louvred Class A.L.G.), 65 open goods wagons (Class F.G.), 80 hopper wagons (Class V.), one hopper ballast wagon (Class V.T.), 15 open goods wagons (Class F.), and 15 cane wagons (Class F.C.).

During 1907 permanent way material was purchased in Great Britain to the value of £121,809, locomotive engines £6,880, and general stores £24,134. 1907 Purchases.

TASMANIAN RAILWAYS.

The Tasmanian Government railways use a gauge of 3 feet 6 inches, and the number of miles open for traffic is 463. There are also 155½ miles of privately owned railways opened for general traffic.

The revenue of the Government railways for 1906-7 was £258,223, as compared with £241,188 in 1905-6 ; an increase of £17,035. The working expenses for 1906-7 amounted to £185,500, as against £172,601 during 1905-6 ; an increase of £12,899. The excess of revenue over working expenses for 1906-7 is £72,723, as compared with £68,587 in 1905-6 ; an increase of £4,136. The expenditure on additions makes the capital cost of open lines on 30th June 1907 £3,943,359. The rate of interest earned per cent. of capital cost was 1·84 as compared with 1·74 in the previous year. Extent and Revenue.

The rolling stock on these railways comprises 71 locomotives, 149 passenger carriages, 40 cars and vans combined, 19 brake vans, 1,266 trucks, and 46 horse-boxes, carriage trucks, brake-down vans, &c., and 200 coal hoppers. Rolling Stock.

New Works.

The amount set down for the railway construction in Tasmania for the year ending September 1909 was £160,000.

New Rail-
way Pro-
posals.

The following railway proposals have recently been reported on:—Extension of railway from Burnie to Flowerdale. Railway facilities for the Sheffield district. Railway facilities for the Castra district. Branch line from Parattah to Tunnach. Extension of Derwent Valley Line. The Government have decided to construct an extension of line from Burnie to Flowerdale, and the Derwent Valley Line extension to Fentonbury. The Commissioners consider that the other lines reported upon should be undertaken locally under the provisions of "The Local Government (Tramways) Act." The Government also proposes the construction of an extension of the Scottsdale Line. The proposed line will pass through the splendid Ringarooma district as far as Branhholm, a distance of 23 miles from Scottsdale.

NEW ZEALAND RAILWAYS.

Mileage
Open

The mileage of lines open for traffic in New Zealand on the 31st March 1907 was 2,456 miles as against 2,406 miles for the previous year. The following extensions were opened:—Omakau, Alexandra, 17 miles 68 chains; Kohatu, Tadmor, 10 miles 28 chains, Otarama, Broken River, 6 miles 52 chains; Ethelton, Domett, 8 miles 34 chains; Hokitika, Ruatapu, 6 miles 65 chains.

Cost.

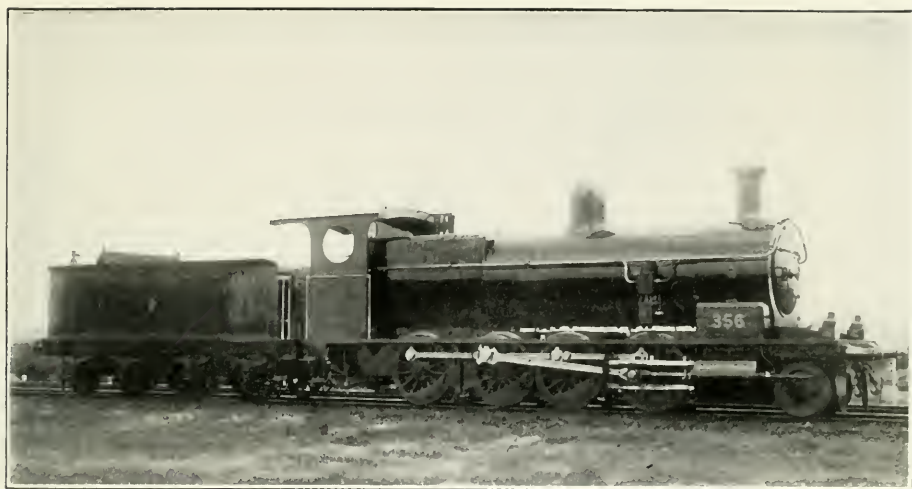
The capital cost of lines open for traffic, including plant and steamers on Lake Wakatipu, has increased from £22,498,972 last year to £23,504,272 for the year under review.

The results may be summarized thus:—

	Year 1907.	Year 1906.
	£	£
Total earnings	- 2,624,600	2,349,704
Total expenditure	- 1,812,482	1,621,239
Net profit on working	812,118	728,465

Revenue.

The net revenue, £812,118, is equal to a return of 3.45 per cent. on the capital invested in the open lines, and 3.19 per cent. on the total capital



EXPRESS PASSENGER LOCOMOTIVE BUILT FOR THE N.S.W. RAILWAYS BY THE CLYDE
ENGINEERING CO., LTD., SYDNEY.



A REMINISCENCE: COACHING BETWEEN WAIMARINO AND OHAKUNE, NEW ZEALAND. (THE MAIN
TRUNK LINE BETWEEN THESE POINTS HAS RECENTLY BEEN COMPLETED.)

(£25,438,568) invested in open and unopened lines. The number of train miles run during the year was 6,755,454, being an increase of 341,881 miles over the previous year. The increased mileage represents additional facilities to meet the requirements of the large business done during the year, and has cost £86,000. The permanent increase to the train service represents 20,375 miles per annum. The total number of ordinary passengers carried during the year was 9,600,786, an increase of 774,404 over the previous year. The average number of men employed during the year was 10,858, against 9,795, an increase of 1,063.

A vigorous policy has been pursued in connection with the building of rolling stock in the railway workshops. This has resulted in three new four-cylinder balanced-compound tender engines, 60 new cars, 11 bogie brake-vans, and 467 wagons, equal in capacity to 1,097 ordinary four-wheeled wagons being added to the stock during the past year.

New steel axles to the number of 1,449 have been placed under cars, vans, and wagons in substitution for old axles. All new rolling-stock built for the Auckland, Wellington-Napier, New Plymouth, and Hurunui-Bluff sections was fitted with the Westinghouse brake before leaving the railway workshops. Machinery of an improved type and greater capacity has been added to the equipment of the railway workshops.

One hundred and twenty and a half miles of track were re-laid last year, viz., 84½ miles of main line with standard 70 lb. steel rails, and 36 miles of branch lines with 53 lb. steel rails that had been removed from the main line.

No less a sum than £1,279,000 will be spent in the coming year on railway development in this Colony, and large orders will be placed for rails and railway materials and machinery.

Since the author travelled from Wellington to Auckland in making his enquiries for this Report, through railway connections have been established from the south to the north of New Zealand. At the time of the writer's visit the railway had been carried to Ohakune in a northerly direction and down to Waima-

Work done.

New Rolling Stock and Equipment.

Tracks re-laid.

Large Openings for Trade.

The Main Trunk Railway.

rinoo in a southerly, and it was necessary to coach by road between these two points. This section was the most difficult portion of the railway to construct, necessitating very heavy banking and the building of several costly viaducts. On going to press with this Report, I learn that the line has been joined up, and that a through service of trains has already been inaugurated between Wellington and Auckland, and by the beginning of 1909 an express service will be started in which sleeping cars will be used for the first time on the New Zealand railways. This North Island Main Trunk railway has been more or less in process of construction for over 20 years and has cost more than £2,500,000.

New Rolling
Stock.

There are already indications that a very heavy traffic will result from the opening of the North Island Main Trunk line, and the question of providing locomotive power and rolling-stock equipment in readiness for the opening of the line has been engaging close attention. Engines of great power will be required to successfully negotiate at a reasonable speed the heavy grades ruling on the 91 miles of the line separating Taihape and Taumarunui. The success which has been achieved by the "A" class four-cylinder balanced-compound already running in the South Island indicates that an engine of a similar type, but with certain modifications, will meet all the requirements of the traffic on the heavy grades of the Main Trunk. Designs have been prepared accordingly, and eight large-tender four-cylinder balanced-compound locomotives of a special type are now in course of construction, and will be completed at an early date.

Sleeping Car
Trains.

Owing to the length of the line and the fact that an essential feature of the time-table will be the establishment of a service that will enable the through journey between Auckland and the Bluff to be made in the shortest possible time, night travelling will be unavoidable and sleeping-cars an indispensable adjunct to the equipment of the through trains. Plans for 40 bogie sleeping cars, four refreshment cars and eight bogie-vans for special use on the North Island Main Trunk trains have been prepared, and the construction of the

vehicles has been put in hand in the State shops. In continuation of the policy enunciated in 1903, that private engineering shops in the colony would be given an opportunity of tendering for the building of railway rolling-stock, a contract has been let to Messrs. A. and G. Price, of the Thames, to build 20 tender engines of the four-cylinder balanced compound type, and the firm has already made a commencement with the work. Local Industry.

On March 31st, 18 locomotives, 112 bogie cars, 15 bogie brake-vans, and 988 wagons were under construction in the railway workshops of the colony, in addition to the order in progress by Messrs. Price Bros. of Thames. Work in Hand.

The number of engines in service on March 31st, 1907, was 398. In the Government Railway workshops to date 53 engines have been built, and 24 old locomotives rebuilt to more modern types. Number of Locomotives.

The car-stock on 31st March 1907 was 966 cars. Sixty new cars, comprising three 60 feet motor-train cars, four 47½ feet refreshment cars, and fifty-three 47½ feet passenger cars were built in the Government Railway workshops and put into service. The additional cars have increased the seating accommodation by 9·13 per cent. Carriages.

The rolling stock also included on March 31st last 14,279 wagons and 326 brake-vans. Wagons.

Docks and Harbours and their Equipment.

PROBABLY no countries in the world possess finer harbours than Australia and New Zealand, and it is a fortunate circumstance that this should be so, since the development of these countries must always depend to a large extent on overseas trade. Magnificent Harbours.

I was much impressed with the progressive spirit which animates the principal port authorities in both the Commonwealth and the Dominion. They recognise that the development of new countries depends on the provision of facilities for rapidly and economically Progressive Port Authorities.

handling and storing goods at the ports and in providing safe entrances, safe anchorages, convenient berthings, docking and repairing facilities for vessels and of bringing the railways of each State into the closest touch with steamship transport.

Extensive
Openings
for Trade.

And so one finds widening of channels, building of wharves and warehouses, new cranes, hoists, conveyors and other machinery and new docks being provided to meet the continually increasing demands in practically all the shipping centres. New dredgers are being purchased, rock cutting and blasting machinery being imported, with all the thousand and one smaller articles and supplies necessary to the making of modern ports.

In both countries the development work that is going on is quite extraordinary, and British manufacturers interested in the class of machinery here required will be well advised to keep in the closest touch with this large market.

In the following pages I propose to briefly refer to some of the characteristics of the various ports, their equipment and facilities, and to indicate trade openings that might be taken advantage of by British firms. More detailed information can be obtained at the offices of the Manufacturers' Association of Great Britain, Queen Anne's Chambers, Westminster, S.W.

FREMANTLE.

The
Harbour.

The general administration of Fremantle Harbour is controlled by a Harbour Trust. At the present time the European mail boats which make Fremantle the first and last port of call in Australia are able to enter and leave the harbour in all weathers and at all tides. Two ocean moles have been thrown out from the north and south heads, the former being 3,450 feet and the latter 2,040 feet long. A channel 450 feet wide and 30 feet deep at low water has been blasted and dredged through the rock which formerly crossed the estuary to the river, and wharves and goods sheds have been constructed along the reclaimed foreshore on the south side of the harbour.



A SNAPSHOT OF FREMANTLE.



SHIPPING TIMBER AND PRODUCE AT BUNBURY.

GLIMPSES OF WESTERN AUSTRALIAN PORTS.

Considerable improvements are being carried out in the equipment of the port, and under the advice of Sir Whateley Elliott a new and large dry dock is about to be constructed. This dock will be 560 feet long with an entrance 94 feet wide on the sill. New Works.

An extension of the jetty at Port Hedland is about to be undertaken. Port Hedland.

Preparations are being pressed forward for the early commencement of four lighthouses which it has been decided to erect on the north-west coast. New Lighthouses.

ADELAIDE.

There is now under consideration a proposal that the Australian Government should undertake the construction of a large dry dock at Adelaide. New Dry Dock.

A new outer harbour is now in course of completion at Lights Passage, Adelaide. The estimated cost is £500,000. Hitherto all mail steamers and other large vessels have had to anchor in Largs Bay and there discharge their cargoes and passengers into tenders and lighters, a work which was often accompanied by danger in rough weather. A new order of things has now been brought about. Vessels may now steam through an entrance channel a thousand feet long by 400 feet wide and 33 feet deep at low water, and tie up to a substantial quay which, when completed, will present a water frontage of 1,500 feet, capable of berthing at least two and sometimes three ocean liners together. Opposite the quay is a swinging berth 3,000 feet long by 1,000 feet wide. The harbour is fully protected against all kinds of weather, and the ease with which the inlet and outlet passages were negotiated by the "Omrah," from which I landed in South Australia, demonstrated the safety and convenience of the new arrangements at this port. A railway has been constructed from the quay to the city, and there is no doubt that these conveniences will do much to stimulate the growth of Port Adelaide. New Harbour at Lights Passage.

The Produce Export Freezing Department of the South Australian Government will shortly be constructing a new freezing works, at an estimated cost of £83,000. New Freezing Works.

New
Jetties, &c.

Provision was also made by Parliament on the estimates for the year for smaller works, such as dredging, jetties, water-works, borings for artesian water, drainage, public buildings, &c., approximately estimated at £500,000.

Breakwater
at Glenelg.

A small reinforced concrete breakwater is to be constructed at Glenelg at an estimated cost of £15,000.

MELBOURNE.

The Accom-
modation.

The port of Melbourne is under the control of the Melbourne Harbour Trust, and has over eight miles of wharves, piers, and jetties in the River Yarra, Victoria Dock, and Hudson's Bay. The area of these wharves is 45·74 acres, of which 12·33 acres are under sheds. The floating plant of the Trust in commission includes three dredgers, one steam tug, four steam hopper barges, ten iron hopper barges, two steam launches, etc. The total quantity of dredgings by the Harbour Trust actually raised in 1906 amounted to 1,218,370 cubic yards, viz., 230,875 cubic yards from Hudson's Bay, and 987,495 cubic yards from the River Yarra and Victoria Dock. Since the establishment of the Trust the river dredgings have amounted to 22,639,866 cubic yards, and the bay dredgings to 12,994,685 cubic yards, making a total of 35,634,551 cubic yards. Of the dredgings, 25,906,483 cubic yards were deposited at sea, and 9,728,068 cubic yards were landed for roads and reclamation work. The average cost of dredging, towing, and depositing in 1906 was 5·29*d.* per cubic yard.

Dredging
Operations.

New Works.

New improvement works are constantly in progress here to accommodate the largely increasing trade, and quantities of machinery and appliances are constantly in demand. At the present time the Coode canal is being widened by 100 feet, which will make its total width 408 feet.

The Victoria
Dock.

This dock, opened in 1892, has an area of 96 acres and a depth of 26 feet at low water. There are 9,000 feet of wharfage, and the total cost, including wharves, sheds, and approaches thereto, was £416,038. The sheds have a total length of 12,000 feet, and cover an area of 568,070 square feet.



SHIPPING WHEAT BY CONVEYORS AT GEELONG, VICTORIA.



SHIPPING WHEAT BY SLING SYSTEM, WILLIAMSTOWN HARBOUR, MELBOURNE.

INDUSTRY IN VICTORIA'S PORTS.

Plans have been approved for the construction of new pier and docks at Melbourne. The first step in this scheme will be the construction of the new piers, and work will be commenced on these almost immediately. It is estimated that the cost will be about £100,000.

New Piers
and Docks.

GEE LONG.

Manufacturers contemplating the establishment of works in Australia will do well to carefully examine the facilities offered at the port of Geelong. A writer in a Melbourne journal refers to it in these words: "Where else shall we look for so magnificent a site and so rising a city? Except Sydney, no Australian town among the southern colonies has advantages to a great commercial capital comparable to those of Geelong."

Port
Geelong.

One has only to glance at the map on the following page to see its admirable geographical position. Within forty miles of Melbourne, a port that at certain seasons is much congested with traffic, Geelong is the natural outlet for an enormous quantity of the farming produce exported from the districts comprising North-Western, Western and South-Western Victoria. During 1906 1,238 vessels entered the port, of an aggregate tonnage of 517,954 tons, some of the vessels being as large as 10,000 tons.

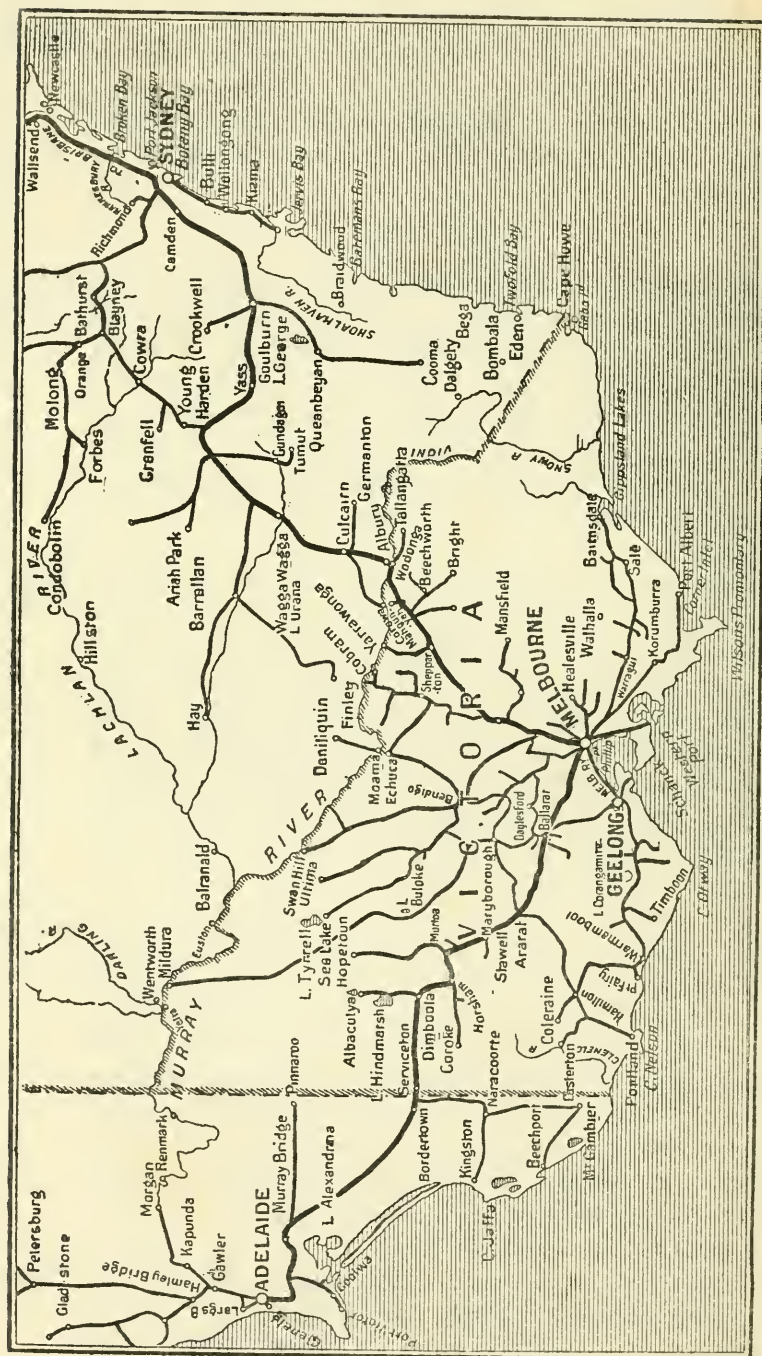
Increasing
Trade.

The inner anchorage comprises an area of 5,411 acres, having a depth from 18 to 33 feet of water; of this, 2,563 acres have a depth of at least 30 feet at low water. Borings which have been taken show that to a large extent the bed is composed of silt, which can be easily removed by pumping if it is ever required to have 30 feet of water over the whole of the 5,411 acres. Owing to the natural breakwater formed by the Spit, which extends right across the seaward entrance of the inner harbour, a safe anchorage is ensured in any state of the weather.

The
Anchorage.

The inner anchorage is approached through the Hopetoun Channel, which was designed by Sir John Coode, in 1879. This channel is 12,000 feet in length and 130 feet wide at the bottom, and has a navi-

Approach.



MAP OF VICTORIA AND ADJACENT PORTIONS OF NEW SOUTH WALES AND SOUTH AUSTRALIA SHOWING CENTRAL POSITION OF MELBOURNE AND GEELONG FOR THE ESTABLISHMENT OF INDUSTRIES. (THE THICK LINES DENOTE THE RAILWAYS.)

gable depth throughout of fully 24 feet 6 inches at low water.

The berthing of vessels is provided for at the following piers :—

Berthing
Space.

Railway Pier, upon which there are five lines of rails.

Moorabool Pier.

Yarra Pier.

Eastern Pier.

Small Jetty and Harbour for fishing boats.

Jetty at Freezing Works.

Explosives Jetty at Limburners' Point.

Fishermans' Jetty, North Geelong.

At North Geelong, which is specially suitable for the establishment of industries, the berthing accommodation is being further increased and there is now under contemplation the early erection of extensive cold storage works.

New Freez-
ing Works.

Excellent sites may be obtained by negotiation with the Geelong Harbour Trust Commissioners, or their consulting engineer, at Queen Anne's Chambers, London, either facing the main harbour or on the banks of the River Barwon in the immediate vicinity. There is a plentiful water supply and fuel is obtainable at rates practically as low as any other port in the Colony. It is served by the Victorian State Railways and is in close touch with Melbourne and Ballarat, which is on the Adelaide main line. Indeed, as a manufacturing centre and one from which goods may be economically distributed through the principal Southern Australian States, Geelong undoubtedly offers exceptional advantages. Its population numbers about 27,000. Electric tramways are shortly to be installed, and there is a scheme now under consideration of constructing a dam across the River Barwon and utilising the stream for the production of cheap water power for driving factories. Considerable drainage operations and Harbour improvements are being carried out and in the near future the port will be able to accommodate vessels as large as any now visiting Australian ports.

Sites for
Factories.

A coming
Manufactur-
ing Centre.

SYDNEY.

Improve-
ments in
progress.

The Sydney Harbour Trust is the authority in charge of this harbour, probably the most beautiful in the world. Considerable improvements have been, and are now being made in the wharfage accommodation of the port, and in the sanitary condition of the area vested in the Trust, by the construction of new jetties, sheds, offices and waiting rooms, by dredging, preventing the pollution of the waters of the port, opening new roads, and by taking means to prevent rats and other vermin from finding a harbourage in the produce stores and in the vicinity of the wharfs.

Great
Harbour
Bridge.

A Royal Commission has recently been sitting in Sydney on the question of communication by bridge or tunnel across the harbour. The existing steam ferry service is unable to deal with the growing traffic. Two schemes have been considered, one involving the construction of a bridge and the other a tunnel. It is expected that the bridge proposal will be decided upon. The navigation of the harbour will necessitate a headway of 170 feet above high water, and in the design before the commission the towers of the two main piers rise 280 feet above the roadway, while the depth to the rock of the foundations will be 170 feet below high water. Thus the bridge will have the unprecedented height of 620 feet. The design comprises two cantilevers resting eccentrically on the two main piers. 1,350 feet apart centre to centre, with anchor spans 500 feet long on the city side and 580 feet long on the North Sydney side. The main piers will each be formed by four steel legs splaying out to masonry plinths 137 feet 6 inches apart. Each of these will stand on an annular steel caisson 60 feet and 34 feet external and internal diameter respectively. The caissons will be sunk to the rock by dredging ten 8 feet circular wells within the 13 feet space between the inner and outer skin. The approaches to the bridge will consist on the city side of four masonry arches, one of 14 feet, one of 95 feet, and two 90 feet spans, and on the North Sydney side of two 270 feet steel spans, and two 70 feet arches. The bridge will accommodate a 30 feet road-

way, a double track electric tramway 26 feet wide, and a double line of standard gauge railway, besides two 10 feet 10 inch footways outside the two main trusses forming the cantilever. The cost is roughly estimated at nearly £2,000,000.

NEWCASTLE.

In 1895 certain breakwater work was authorised by Parliament at a cost of £140,000. This expenditure was reached in September last, and it has since been decided to refer to the Parliamentary Standing Committee on Public Works for inquiry and report the extension of the northern breakwater, a further distance of 1,170 feet, the estimated cost being £102,500. New Works considered.

Increased accommodation being urgently required, principally in connection with coal shipping, a scheme is under consideration for the construction of extensive wharfage at Carrington, Newcastle Harbour. The scheme includes the excavation to at least 30 feet at low water spring tides of two basins, with an intermediate pier, 800 feet and 600 feet wide at the inner and outer ends respectively, the basin being 800 feet wide at the head, and 1,650 feet and 1,250 feet respectively at the outer ends. The total water area of the basins will be about 310 acres. The wharfage, which will be constructed as required, will have an ultimate length of nearly four and three-quarter miles, including a length of 1,200 feet now under construction. It is proposed to construct the greater portion of the work in concrete, the remainder in timber. New Wharfage.

The question of removing a large quantity of sunken rock, principally in the entrance to the harbour, and off the lower end of the Carrington Coal Shipping wharf, is also under consideration, as is also that of constructing either a grading or a floating dock for this port, but nothing of a definite nature has yet been done in the latter matter. New Wharfs and Docks contemplated.

KEMBLA.

It has recently been decided to construct a portion of the northern breakwater with the stone up to four tons in weight arising in the quarry, on obtaining the New Breakwater.

larger blocks for the more exposed eastern breakwater. The northern wall will, when completed, have a length of about 4,000 feet, and will absorb about 860,000 tons of stone, the outer end being in 51 feet of water at low tide. The area of the harbour enclosed by this breakwater, and the eastern wall, of which 1,960 feet have been constructed, will be 334 acres, of which 205 acres will be 24 feet and over at low water. The estimated cost of the proposed northern breakwater is about £140,000.

CLARENCE RIVER.

New
Breakwater.

A proposal to construct a breakwater at the northern side of the Clarence, to have a length of 3,650 feet, and to cost £208,500, has recently been inquired into by the Parliamentary Standing Committee on Public Works.

BRISBANE.

Growing
Port.

Brisbane is a port which is rapidly increasing in importance, and efforts are being made to keep the equipment up to date and of a capacity to deal adequately with the growing trade. A still further growth will take place in the shipping trade of this port when the new four-weekly steamship service of the British India Company is running. The ports of North Queensland will thereby be directly connected with Great Britain, and these will include Thursday Island, Port Douglas, Townsville, Mackay, Rockhampton and Maryborough. The supplies for the American forces in the Philippines are drawn from this port, and it is obvious that when the Panama Canal is in operation the importance of the port will be still further increased.

HOBART.

New Im-
provements.

A comprehensive scheme of improvements for this port has been adopted, and plans are being prepared to include the extension of wharves, &c. The work will take some years to complete.

WELLINGTON.

Wellington
Harbour.

The harbour of Port Nicholson (Wellington) contains an area of about 20,000 acres, having depths varying from six to fourteen fathoms, and of sufficient capacity



SHIPPING APPLES AT HOBART, TASMANIA.



A LOG POND AT GEELONG, VICTORIA.

TWO GROWING AUSTRALIAN INDUSTRIES.

to enable a squadron of warships so manœuvre under steam within its limits. The anchorage is good throughout, the bottom being silty clay and sand, and the harbour, being land-locked, is well-sheltered. The width of the entrance in the narrowest part exceeds 3,600 feet, with a depth of from seven to eight fathoms. The current in the entrance never exceeds two knots, and the rise and fall of tide varies from three to four feet.

The Board has a complete and elaborate system of hydraulic plant, comprising a 10-ton fixed crane, having a variable rake up to 32 feet, so as to command the hatchways of the largest ocean liners visiting these ports. This crane has also a smaller power of three tons for light lifts, and is fixed at the outer tee of the Queen's Wharf, where there is a depth of water, at low water, of 30 feet. There are five fixed double-powered 2-ton and 12-cwt. cranes on the Queen's Wharf for handling cargo, and sixteen movable double-powered 2-ton and 12-cwt. cranes, having variable rakes up to 32 feet, to work cargo from ocean steamers and sailing ships. There are on the Glasgow Wharf and on the Railway Wharf respectively, ten double-powered 2-ton and 15-cwt. movable gantry cranes, with 15-cwt. supplementary jiggers. There are also movable winches for working cargo by means of tackle from ships' yard-arms or derricks, together with sundry smaller hydraulic plant in the sheds and stores. On the Railway Wharf is installed a 20-ton crane with a depth alongside of 32 feet 6 inches, capable of commanding the hatches of the largest ocean steamers and the railway lines.

There is also a patent slip, owned by a private company, which can take vessels up to 2,000 tons, not exceeding in length 300 feet, or a greater draught than 16 feet at the forward end when going on the slip. The ways are laid to a gradient of 1 in 23, and are 1,070 feet in length, and at high water have a depth of 32 feet at the outer end. The slip is situated in Evans' Bay, about 3 miles by road and about $2\frac{1}{2}$ miles by water from the wharves, and is in telephonic communication with the town. Appliances for repairing both wooden and iron vessels are owned by the Slip Company.

Harbour
Appliances.

Patent
Slip.

New
Pumping
Engine.

The Board recently placed an order with Messrs. Simpson Bros. for a Worthington triple expansion horizontal duplex pumping engine, having four single action water plungers, 8 in. diameter and 30 in. stroke, and with two sets of steam cylinders each 86 in., 25 in., and 42 in. in diameter, having a maximum pumping capacity at 750 lbs. per square inch of 100 cubic feet per minute; a separate surface condenser with Worthington air and circulating pump is also to be supplied.

New
Hydraulic
Plant.

Plans have been prepared for hydraulic plant required in connection with two-storied stores, to be built on the King's Wharf. This will consist of eight pedestal cranes to be placed on the outside galleries of the stores, eight jib cranes to be erected on the corners of the buildings, six hatchway cranes to be erected inside the stores for lifting or lowering goods between the floors, and thirty-two jiggers for stacking goods on each floor of each store. All these appliances will be capable of lifting about twelve hundredweight each.

New Gantry
Cranes.

Quotations have been asked from five selected British and Australian firms, for twelve hydraulic gantry $2\frac{1}{4}$ -ton and 15-cwt. double-powered cranes similar in type to those on the Railway and Glasgow Wharves, but having a larger rake. Owing to the recent tariff having imposed a duty of 20 per cent. on hydraulic cranes where there was previously none, some of the Dominion manufacturers have expressed the opinion that they will now be able to compete. The Board is determined to give them the chance of doing so.

New Graving
Dock.

A dock having the following dimensions is shortly to be constructed :—

	Ft.	In.
Length inside extreme outside caisson stop at bottom	651	0
Length inside extreme outside caisson stop at top	663	0
Width of entrance and of caisson stops at ground level	84	0
Depth of sill below ground level	40	6
Depth of sill below ordinary high water level	32	6
Depth of sill below ordinary low water level	28	6
Width of dock at ground level	106	0
Width of dock at bottom	69	0
Width of dock at caisson stops at level of top of permanent blocks	69	4
Height of permanent blocks above bottom of Dock	2	6
Depth on permanent blocks below ordinary low water	28	0

It is proposed to construct the dock by the deposition of the concrete of which it is to be built into the water so as to form a first cast or roughly-formed dock, and to similarly build the pumping station. After the first cast is in place it is proposed to surround the roughly-formed dock with clay filling, and to build a coffer dam across the entrance, to erect the permanent pumping plant in the station which would be temporarily pumped out for the purpose, and to use the permanent pumps to unwater the dock and keep it dry whilst the final internal skin and shape is given to the dock. By the adoption of this method of construction by the deposition of concrete in the water it is believed that as good work will be obtained as if the work had been constructed in the dry, and the great cost of coffer dams to enclose the area and of pumping during the operation will have been avoided.

Authority has been given to make inquiries about the permanent pumping plant and power for driving same, and this will have to be arranged for, and the floating caisson designed, and a contract let for building it. It is anticipated that the loan funds will be sufficient to enable not only ample light crane accommodation to be supplied, including a heavy crane commanding the dock, but also the purchase of heavy machinery and the erection of dock shops to enable work to be carried out in a satisfactory manner at the dock.

Method of
Construction.

Dock
Machinery
wanted.

AUCKLAND.

The harbour of Auckland consists of an extensive land-locked estuary at the southern end of the Hauraki Gulf on the east coast of the North Island. The inner harbour, from North Head to Kauri Point, is about $5\frac{1}{4}$ miles long by a width varying from one mile to one-third of a mile on the one-fathom line. The depth in the harbour ranges up to twelve fathoms, with good holding ground. The range of the tide is from 8 feet to 12 feet. The harbour is sheltered from all winds by an outlying chain of islands and the peninsula above referred to. The deep channel at the approach has a width of over one mile at the Rangitoto Reef, with half-a-mile at the narrowest part. The least

Auckland
Harbour.

depth in the centre of the channel is 31 feet L.W.S.T., and 41 feet at H.W. It is well marked with buoys and a Pintsch's occulting beacon, and two Wigham oil light buoys for the more complete indication of the channel, are approaching completion.

New Improvements. The port has excellent appliances and conveniences for carrying on an extensive commerce. A large and comprehensive scheme of harbour improvements is now in progress by which the extensive berthage and shed accommodation now afforded will presently be very much increased.

New Electric Machinery. Electric capstans will be installed on some of the wharves, and the facilities for rapid discharge of vessels and handling of cargo will be further increased by the supply of electric cranes and 80-ton floating crane of modern type, for which tenders are now invited.

Lighting. Wharves and sheds are at present adequately lit with gas, and provision is being made for electric lighting installation.

Railway Extension. New railway lines will be laid upon several of the wharves. Large freezing works and timber mills are in close proximity to the berths.

Tug. A powerful twin screw steam tug is now under construction, to be used in berthing vessels.

Berthage. The depth of water at the berths varies up to 30 feet, and at the new wharves berthage accommodation for vessels drawing up to 33 feet is being provided.

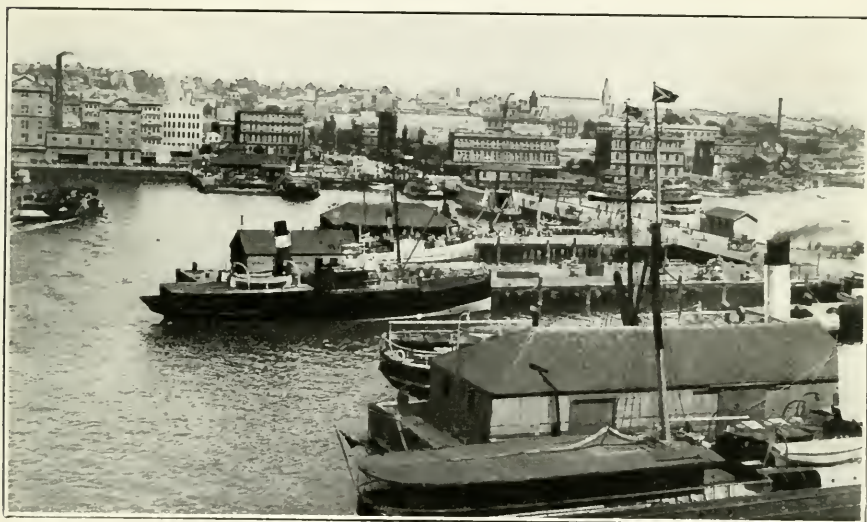
Docks. There are two docks, the property of the Auckland Harbour Board. The dimensions of Calliope Dock on the northern shore are as follows:—

										Ft.
Length over all	-	-	-	-	-	-	-	-	-	525
Length on floor	-	-	-	-	-	-	-	-	-	500
Width over all	-	-	-	-	-	-	-	-	-	110
Width at entrance	-	-	-	-	-	-	-	-	-	80
Width on floor	-	-	-	-	-	-	-	-	-	40
Depth on sill, ordinary spring tide	-	-	-	-	-	-	-	-	-	33

A complete equipment of modern machinery has been installed to Admiralty specification, which will enable any repairs to naval or merchant vessels to be undertaken. Eighty-ton sheer-legs are in course of erection adjoining the dock. The berth at the Calliope Dock Jetty will be dredged to 33 feet. Alterations have



QUEEN'S WHARF, WELLINGTON.



AUCKLAND WHARVES AND CITY.



A GLIMPSE OF LYTTELTON.

SOME OF NEW ZEALAND'S MAGNIFICENT HARBOURS.

been made to the lower altars of the dock, whereby vessels of 60 feet beam can be accommodated, and the matter of further alterations to provide for vessels of the "Corinthic" and "Ionic" type on normal blocks is receiving attention.

The dimensions of the Auckland Dock on the southern shore are as follows :—

								Ft.	In.
Length over all	-	-	-	-	-	-	-	312	0
Length on floor -	-	-	-	-	-	-	-	300	0
Width over all -	-	-	-	-	-	-	-	65	0
Width at entrance	-	-	-	-	-	-	-	43	0
Width on floor -	-	-	-	-	-	-	-	42	0
Depth on sill, ordinary spring tide	-	-	-	-	-	-	-	13	6

The Board has under consideration the matter of Patent Slip. constructing a patent slip for vessels up to, say, 500 tons.

The Board has granted the Admiralty a site adjoining Coaling. the dock for the purpose of a naval coaling station, and has now under consideration the question of providing modern coaling machinery. Colliers from the South and Newcastle, and the railway from the interior, afford adequate facilities for coaling merchant vessels.

The Auckland and Manukua Canal Bill was recently New Canal. discussed in Parliament. It provides for the Auckland Harbour Board acquiring land under the Public Works Act (1905) for the purpose of constructing a canal between the Waitemata and Manuka Harbours.

LYTTELTON.

One thousand five hundred and ninety-three vessels Trade during left this port, of an aggregate tonnage of 1,011,467 tons, 1907. and the value of goods exported at the Port of Lyttelton was £2,836,739 while the value of the imports amounted to £2,640,506.

A great many improvements are being effected on New Works. this splendid harbour. Dredging operations and works are being pushed forward and three new jetties are in course of construction.

There is a graving dock, 450 feet long by 82 feet Dry Dock. wide on surface, which gives a depth on the sill at high water of 23 feet.

New
Harbour
or Canal.

The engineer of this harbour has proposed that a new harbour, constructed in the vicinity, at Gollan's Bay, at an estimated cost of £655,000. An alternative scheme under consideration is the construction of a canal from Lyttelton to Christchurch. This would be a gigantic scheme, and would cost something about £2,000,000 to construct. The Gollan's Bay scheme is one that has been advanced to obviate the construction of the canal, and at the same time satisfy the demands of the trade of Christchurch.

DUNEDIN AND PORT CHALMERS.

Otago
Harbour.

Otago Harbour or Port of Dunedin, New Zealand, is the home of the Union Steamship Company of New Zealand. At the head of the harbour, a distance of thirteen miles from the entrance, is the city of Dunedin. Dunedin, founded in 1847, has a population of about 60,000, and as a manufacturing centre is increasing rapidly in importance. Large tracts of the adjacent country are still undeveloped, possessing valuable mineral resources and a soil and climate equal to that found anywhere in New Zealand. The opening up of these tracts by railways is now in progress, and a comprehensive scheme of irrigation is engaging the attention of the Government. The consummation of this latter scheme will in effect add a new province to New Zealand, and advance the trade of the Port of Otago.

Port
Chalmers.

Five miles from the entrance to the port is the town of Port Chalmers, which was formerly the shipping centre of the port.

Port Im-
provements.

Navigation between Port Chalmers and Dunedin is safely undertaken through a channel having a minimum depth of 18 feet at low water, now being rapidly improved by dredging. It is anticipated that within a period of three years a minimum depth of 21 feet will be obtained. The general class of vessels visiting Otago Harbour and drawing up to 22 feet of water berth at Dunedin; but with the improvements now being effected in channel depths and wharf accommodation, vessels drawing up to 24 feet of water will be able to lie at Dunedin wharves. There are at Dunedin (at present) two deep water berths for vessels up to 500 feet long and 21 feet

deep at low water, and four for similar class of vessels but 20 feet deep at low water, with a total wharfage of about 6,000 feet. An extension of the wharfage is now in progress, making provision for vessels drawing up to 25 feet of water. At Port Chalmers there are 500 feet of wharfage at which vessels drawing 26 feet can be accommodated.

Storage accommodation at Dunedin is on an ample scale, and totals 85,000 square feet of surface. This will shortly be added to by the addition of 15,000 square feet of storage area. The wharves are being equipped with electric cranes to lift up to 10 tons. There are sheer-legs of an up-to-date construction, capable of lifting up to 80 tons.

Storage and
Wharf
Equipment.

There are two docks at Port Chalmers of the following dimensions :—

No. 1 DOCK.									
								Ft.	In.
Length over all	-	-	-	-	-	-	-	335	0
Length on floor	-	-	-	-	-	-	-	328	0
Breadth over all	-	-	-	-	-	-	-	68	0
Breadth on floor	-	-	-	-	-	-	-	41	0
Breadth where ship's bilge would be	-	-	-	-	-	-	-	43	0
Breadth at dock gates	-	-	-	-	-	-	-	53	0
Depth of water on sill at H.W.O.S.T.	-	-	-	-	-	-	-	17	6
No. 2 DOCK.									
Length over all	-	-	-	-	-	-	-	500	0
Length on floor	-	-	-	-	-	-	-	490	0
Breadth over all	-	-	-	-	-	-	-	90	0
Breadth on floor	-	-	-	-	-	-	-	55	4
Breadth where ship's bilge would be	-	-	-	-	-	-	-	67	0
Breadth at dock gates at top	-	-	-	-	-	-	-	70	0
Breadth at dock gates on floor	-	-	-	-	-	-	-	67	6
Depth of water on sill at H.W.O.S.T.	-	-	-	-	-	-	-	22	0

At Port Chalmers and Dunedin the shops are equipped with the best and latest appliances necessary for executing the heaviest ship repairs. Propeller shafts up to 15 inches can be forged at the machine shop connected with the dock.

Engineering
Shops.

The local authority on harbour matters is that of a public Board, who control the mercantile trade of the port and levy the necessary dues and charges for its maintenance. Total tonnage, inwards and outwards, of shipping entered during the year 1907 was 1,374,064 tons, and the total cargo passing over the wharves

Trade in
1907.

amounted to about 400,000 tons. The increase in the tonnage of shipping and goods during the last few years has amounted to about 50,000 tons a year of each class.

THE BLUFF.

Shipping in
1907.

The record of shipping entering the port during 1907 shows a very pronounced increase over the figures for 1906. Three hundred and four vessels entered, aggregating 523,115 tons net, being an increase over the previous year of 50 vessels of 49,928 tons, or about 11 per cent. Of the total 10 were sailing ships of 11,783 tons and 294 steamers of 511,332 tons. This is the first year in which half a million tons have been reached and passed, and the tonnage is double that of 1898, nine years ago.

Rock
Cutting.

The Harbour Board has had under consideration an alternative scheme for removing rock by means of Lobnitz's patent rock-cutter. Inquiries are now being made by the engineer on the subject, and if it should promise to be more economical than blasting a trial will probably be made.

New Dock.

The question of making provision locally for the necessary annual overhaul of the dredges and tug has received consideration, with the result that the Board has now decided in favour of a small dry dock, which it is estimated can be constructed in connection with the eastern reclamation, at a cost of about £8,000.

Improvement
Works in
sight.

Outside of blasting and dredging operations the principal works facing the Board in the near future are the following :—

		£
Replacement of western end of wharf, say	-	9,000
Construction of Freezing Works Wharf	-	15,000
Dock	- - - - -	8,000
		<hr/>
		£32,000

These works will probably be spread over the next three years.

TIMARU.

Shipping in
1907.

The total number of vessels arriving at the port during the year 1907 was 340, the total tonnage being 397,170 tons.

The need of increased accommodation is receiving attention, and the consulting engineer, Mr. Maxwell, has reported on the present requirements and future developments of the port. He has outlined works entailing an expenditure of some £78,000. The recommendations have been considered and it has been decided to proceed with the construction of a new wharf, giving some 1,300 feet increased accommodation.

Port Developments.

New Wharf.

GISBORNE.

The construction of a new complete outer harbour is contemplated here and an expert has been appointed to report on its cost and suggest a scheme. The outlay will probably be about £400,000.

New Outer Harbour.

Irrigation, Water Supply, and other Public Works.

IN addition to new railway construction and dock and harbour improvements, an enormous sum of money is annually being expended by the States of the Commonwealth and in the Dominion on irrigation, water supply, drainage schemes, road construction, public buildings, &c., necessitating the purchase of enormous quantities of cement and building materials of all kinds, pipes, bridge materials, contractors' machinery, tools and supplies, pumps and pumping machinery, traction engines and trucks, well sinking machinery, door and window furniture, and hardware, and a hundred other kinds of goods and materials. Some idea of the opening for business in this connection might be obtained if I gave a few figures showing what the various States and the Dominion propose to spend during the coming year.

A Large Market.

For 1909 New South Wales has allocated a sum of £758,000.

Allocations for Public Works.

Victoria, according to an estimate by Sir Thomas Bent, the Premier, will spend during the next six years £7,000,000 sterling on public works, but this will include not only irrigation, road and other improvements, but the electrification of the Melbourne suburban

railways and other railway and harbour improvements. £1,000,000 will also be spent on the Melbourne water supply.

South Australia has spent over £5,000,000 sterling on public works during the past few years, and next year has set aside about £250,000, excluding harbour and railway work.

Queensland has also voted a considerable sum. Last year this State spent £109,000, chiefly on buildings of all descriptions, from Government offices to settlers' huts. I note that the expenditure included such items as furniture, stoves, windmills, pipes, tanks, &c.

Western Australia is also spending a considerable amount, while Tasmania has voted £183,070.

The Government of New Zealand has provided a sum of £607,000 to be spent on roads, £292,000 on public buildings, £100,000 on irrigation, and a considerable sum in addition on the development of coal fields and other mining propositions.

Five Millions
Expenditure.

A moderate estimate of the total expenditure in irrigation, water supply, and other public works, excluding railways and harbours, during the coming year will total over £5,000,000. Of course the greater portion of this will be distributed in wages, but probably a sum of £750,000 will be spent in purchases.

Methods of
Business.

Manufacturers of materials used in connection with these works should note that practically all orders are placed with local houses. A great many of the works will be let to contractors, while others will be carried out directly by Government departments, but both will place orders locally for practically all their requirements. In the cases of purchases of large quantities of cement, big installations of machinery and large supplies of piping, &c., tenders may either be advertised for locally or in the trade papers at Home. Further particulars in regard to this important matter will be found in the section entitled "The Market and how to work it."

IRRIGATION.

A few details will doubtless prove of interest concerning some of the principal irrigation works now being proceeded with, and under consideration.

The principal work being carried out in this State is the Northern Murrumbidgee Irrigation Scheme, authority for which was obtained in December 1906. It is a proposal of the Public Works Department, and the estimated cost—exclusive of the resumption of the irrigable area—is £1,574,008. New South Wales.

The following is a brief description of the scheme :—

A high masonry dam across the Murrumbidgee River at the Barren Jack Site (from "Booren Yiack," native words for precipitous mountain), about 22 miles south-west of the town of Yass (selected as the new Capital site for the Commonwealth), on the Main Southern Railway line. This dam, designed to hold a depth of 200 feet of water immediately above it, forms the Barren Jack reservoir, backing the water up the Murrumbidgee River for a distance of 40 miles, and having a capacity of 766,324 acres feet of water (*i.e.*, equal to 12 inches depth of water over that number of acres). This reservoir is intended to retain flood waters which will be released for use down the river during dry summer months. Barren Jack Dam.

A movable diversion weir on the Murrumbidgee River, about 236 miles (by river) below the Barren Jack Dam, and 19 miles in a direct line or 40 miles by river above the town of Narrandera, on the South-western Railway line, to turn the required amount of water from the river into the main canal. Diversion Weir.

A main canal, taking off from the river just above the diversion weir, having a course through the town of Narrandera, and thence following the western edge of the high ground in a generally north-western direction, together with a main branch canal, commanding practically all the land lying to the westward as far as Hay and Gunbar. The Main Canal.

A series of main and subsidiary distributing channels taking off at intervals from the main and branch canals to distribute the water to the various small holdings. Distributing System.

The amount of high-class irrigable land suitable for intense culture, commanded by this canal, is estimated at 357,000 acres. Nearly half of this area is freehold, the balance consisting of Crown, conditionally purchased, and conditionally leased lands. It is proposed Estimated Results of the Work.

to acquire the most suitable of these lands and subdivide into small irrigation holdings up to 100 acres in area, and to sell to settlers on easy terms. All lands will be liable to rates for domestic, stock, and irrigation purposes. The irrigation rate proposed will be equal to a charge for water of 5s. per acre foot, which gives the very moderate annual rate of 10s. to 12s. 6d. per acre for full supply of 24 to 30 acre inches. In addition to the high-class lands suitable for intense culture and closer settlement, an area of about 1,000,000 acres of pastoral lands will be commanded, and supplied with water for stock purposes and the irrigation of about one acre out of every 30 fodder crops.

Progress of
the Great
Dam.

The work of the Barren Jack Dam has been pushed on with every expedition; the railway connection with the Main Southern Line was completed in June 1908, and the trains are now running to the site of the dam. The diversion works have been carried out, completely isolating the site of the foundation for the dam, the water being conveyed past the works by a channel capable of carrying 8,000 cubic feet per second, which will admit of the work being carried on without interruption. The power house and adjoining stations for providing electricity for driving the machinery during construction of the dam were practically complete at the time of my visit. The chief difficulties of initiating the scheme were rapidly overcome, and by the time this Report appears this dam will be approaching completion. The cost of this portion of the work is estimated at £250,000. An illustration of the site is here given.

Of the canal works outlined above, work on the diversion weir and canal head gates at Berrembed, some 20 miles above Narrandera, was started by day labour in December 1907, and has been pushed on so rapidly that at the present time fully 10,000 cubic yards of rock, quite two-thirds of the whole amount to be taken out at the weir site, have been excavated; the larger or right-hand concrete abutment wall is well on towards completion, and nearly the whole of the plant and machinery required for the completion of the work has been erected and is in full working order. A town-



SITE OF THE BARREN JACK DAM, MURRUMBIDGEE RIVER.



SYDNEY WATER SUPPLY. THE CATARACT DAM.

TWO GREAT ENGINEERING WORKS IN NEW SOUTH WALES.

ship similar to that described as laid out at Barren Jack is also now existing at Berrembed, and with the river keeping at a moderate height, by January 1909 the main portion of this important part of the work should be nearing completion.

The main canal with protecting flood banks has been excavated for some 5 miles above, through and below the town of Narrandera; a further length of 5 miles from there westwards is at present under construction; tenders have recently been advertised for the construction of a further length of 15 miles, while plans are ready for a further 20 miles of the main canal as far as the Mirrool Creek, where the lands to be subdivided by the Government for irrigation farms is first reached. The main canal so constructed has a bed width of 50 feet, with side slopes of $1\frac{1}{2}$ to 1 foot, and, with a flow depth of 7 feet, will carry 1,000 cubic feet of water per second. A very fine concrete regulator having 5 quadrant gates, each 12 feet wide, spans the canal just above Narrandera, while another of similar design, 5 miles above that town, is now under contract, and these, with the head gates at Berrembed, will, when complete, absolutely control all waters entering the canal. A large number of road and access bridges, a 6 feet diameter reinforced concrete syphon to carry the Narrandera stormwater drainage under the canal, and a large amount of netting fences to protect the canal banks from stock and rabbits, have also been completed. The running of trial lines for the branch canals has also been in hand for some time, and with the passing of the necessary legislation the work of re-subdivision of the resumed land will be at once entered upon. At the time of my visit about 700,000 cubic yards of canal excavation had been finished, and with the diversion weir, head gates, regulator, bridges, syphons, &c., survey work, design, and supervision, has cost £65,000.

Murrumbidgee Northern Canal.

Progress of the Work.

An experimental farm of 300 acres had already been started about 14 miles west of Narrandera and alongside the Yanco Siding on the South-Western Railway line, and was under the control of the Agriculture Department, who were planting out the various fruits and crops deemed suitable for the locality.

Experimental Farm.

Other Great
Schemes.

Of other irrigation projects in New South Wales, the execution of which is probably only a matter of time, may be mentioned (1) the Wyangala scheme, which would tap the Lachlan below its junction with the Abercrombie River; (2) the Terramungamine scheme, which would draw its water from the Macquarie River, in the neighbourhood of Narromine; and (3) the Bungowannah scheme, which would be connected with the Murray not far from Albury.

Victoria.

With regard to the work now under consideration and contemplated in Victoria, I cannot do better than give a few details published in that interesting Australian publication, "Australia of To-day."

Total
Expenditure.

Herein it is stated that the total expenditure by the Government to the end of 1907 on works of water supply—outside the cost of the Yan Yean service, which supplies Melbourne and suburbs—was £6,228,900. Allowing for a number of head-works—such as the Goulburn Weir, the Waranga Reservoir, and works on the Broken, Loddon, and Campaspe rivers, and at Kow Swamp, on the Murray—on the cost of which no interest is charged by the Government to those benefited, and deducting also certain other sums written off or advanced as free grants, there remains a balance of £3,653,287, in respect to which settlers provided with water for domestic and stock supply and for irrigation are expected, when the schemes are fully developed, to provide the interest.

Area
supplied.

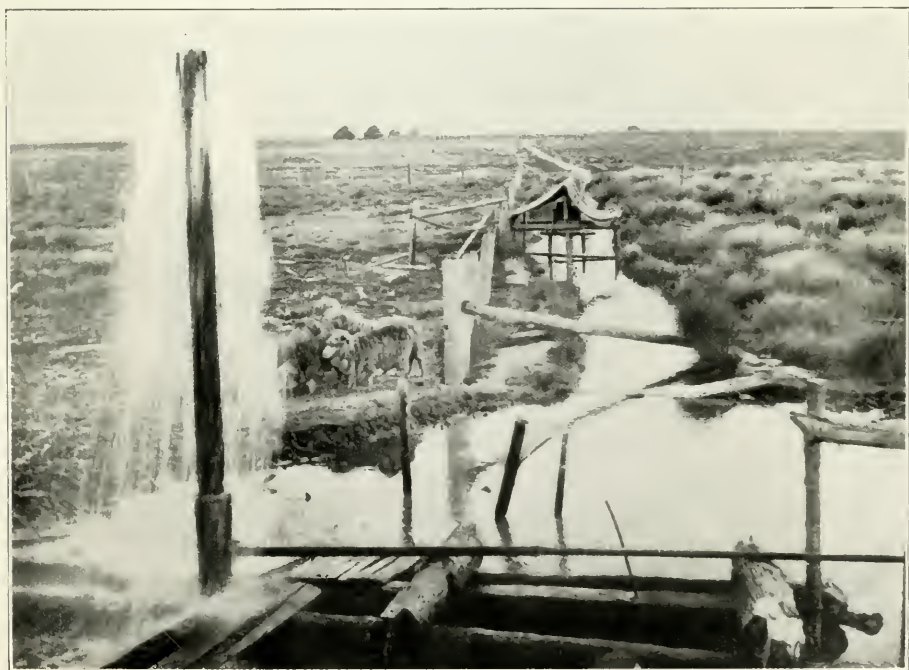
The area of country lands artificially supplied with water for domestic and stock supply and for irrigation is 16,875 square miles.

Area effec-
tively Irri-
gated.

The area of the irrigated districts is about a quarter million acres, but only a portion of this is supplied with water for effective irrigation. It will be several years before additional schemes of supply (now being constructed) will enable this to be done. The land irrigated for the year ended 30th June 1907 was 104,920 acres. The crops irrigated included lucerne and other permanent fodder crops, cereals, pasture grass and orchard, vineyard, and garden produce. In the Rodney irrigation district the maximum depth of water supplied (in one watering) on lucerne was



IRRIGATION WORKS IN VICTORIA. WEIR AT GOULBURN.



AN ARTESIAN BORE IN NEW SOUTH WALES.

IRRIGATION AND WATER SUPPLY.

8·4 inches, the minimum depth 3·6 inches, and the mean depth 5·5 inches. In the Cohuna district the figures for the same crop (for one watering) were respectively 9·0 inches, and 4·0 inches, and 5·4 inches, and in the Swan Hill district 14·0 inches, 8·4 inches, and 10·2 inches. Some idea of the immense quantities of water required to irrigate large areas of land may be gained from the fact that 1 inch in depth over an acre is equal to about 22,000 gallons, or 100 tons of water.

The principal irrigable area in the State lies between the Broken and Loddon rivers. The head-works to supply this territory are on the Goulburn. They include the Goulburn Weir (above Murchison), an immense main channel 24 miles long, and with a bed width of 110 feet to the Waranga Reservoir itself, covering 12,000 acres, and impounding 53,750 million gallons, capable of being drawn off by gravitation to irrigate the land to the westward. The cost of these works to date (1907) amounts to £716,000. Other expensive head-works have been constructed at Kow Swamp on the Murray, and on the Loddon and Campaspe Rivers for the supply of water to portions of the district. But it is apparent to irrigation experts and engineers that expensive and costly though these works be, they will be inadequate to provide an efficient supply of water for the irrigation of anything like the complete area of irrigable land which will be commanded by the channels now in course of construction. Additional storage reservoirs will have to be provided, and a scheme of immense proportions has been entered upon on the Goulburn River, at Trawool, in the Yea district.

The Irrigable Area.

A great dam will be constructed across a gorge near Seymour, and during my visit borings were being made on the site of the wall, and satisfactory foundations were found at shallow depths. The weir will be about 1,700 feet long and 140 feet high at the deepest part. It will impound water for about 20 miles upstream, and will provide a reservoir of a capacity of 60,000 million cubic feet. The cost is estimated at £1,250,000 sterling. When completed this reservoir

The Great Trawool Scheme.

will hold about 20,000 million cubic feet of water more than the Assouan Dam, and will therefore be easily the largest in the world.

The River
Murray.

For a long time past negotiations have been going on between the adjoining States of Victoria, New South Wales, and South Australia, in respect to the joint control of the River Murray, so that no one of the three States might be unfairly treated by the others.

Joint Agree-
ment.

The proposals provide for the control of the river to be vested in a Board of three Commissioners, one to represent each State. When the navigation of the river is interfered with by the amount of water drawn off for irrigation, the three States are to undertake the work of locking the river from Blanche Town in South Australia to Echuca in Victoria, and also the Murrumbidgee, from its junction with the Murray to Hay. A rough estimate of the cost of the locks is £2,500,000. Towards the cost of storage works at Lake Victoria, each State will contribute one-third, and in respect to the other works South Australia will contribute one-third, and the other States the balance in proportion to their contributions of water to the main stream. The works when carried out will secure to Victoria the permanent navigation of the Murray along 670 miles of its frontage and set free for use in the State 25,000,000 cubic feet of water for irrigation in a normal year. This would irrigate 3,000,000 acres 13 inches deep.

The Murray
and Mallee
Country.

The Murray—from Swan Hill to the boundary line of the State—skirts for practically the whole of its course the Mallee territory, the greater portion of which is still in a virgin state and unsettled. It is proposed to set aside about 5,000 acres at White Cliffs (a few miles from Mildura), and 2,000 acres at Nyah. In each of these settlements—close to the banks of the river—a settler will be able to take up 50 acres for a homestead block, and inalienable from the title to this block will be attached the title to 400 or 500 acres of the back country, 12 or 15 miles away. Water—raised by pumping from the river for the homestead blocks—will enable fodder crops to be grown for stock, and fruit and vegetables for the house-

hold, while in seasons of normal rainfall the settlers will be able to work the back country successfully for wheat growing.

What has been achieved in the Mildura district by irrigation is too well known to warrant any reference here.

In Southern Australia, in the valley of the Murray River, there are some 70,000 acres of low-lying land which the Government proposes to irrigate and make available for settlement in the near future. The State Surveyor-General has estimated that this can be done for an average outlay of £6 an acre, and when done the land would be worth £20 an acre. A small start has already been made, and 600 acres reclaimed and settled. South Australia.

Reservoirs and reticulation works for the Bekina Creek Irrigation Scheme near Orroroo, about 176 miles north of Adelaide, have been decided on at an estimated cost of £35,000. Further New Works.

As showing what can be achieved in Australia by irrigation, it might be mentioned that before the Renmark district in this State was artificially watered it was incapable of supporting 500 sheep. To-day it has a population of over 1,000 people, and exported products last year to the value of over £35,000.

The New Zealand Government have allocated a sum of £100,000 for irrigation works in the Otago district. It is proposed to tap the upper reaches of the Clutha river and distribute the water over some excellent agricultural country that is subject to drought in that district. Works in New Zealand.

ARTESIAN WELLS.

Artesian wells have been sunk in all the mainland States of the Commonwealth, but the greater number of bores have been made in what is known as the Great Artesian Basin, which comprises an area of about 560,000 square miles. Of this area some 376,000 miles are in Queensland, 110,000 in South Australia, and 83,000 in New South Wales. It is estimated that there are about 2,500 wells yielding good supplies of water, either with a natural flow or by pumping. Many streams, some of considerable size, flow into the Great Artesian Wells.

The Great Basin.

Artesian Basin and there find their way, as is generally believed, into a mysterious subterranean sea which reminds one of the following lines :—

In Xanadu . . . the sacred river ran
Through caverns measureless to man,
Down to a sunless sea.

Yields and
Depths.

Water has been tapped at depths of from 60 to 4,400 feet, and yields run as high as 4,500,000 gallons per day. The character of the water obtained varies in a remarkable manner. Two bores in close proximity will give totally different analyses, but, generally speaking, the water so found, if not always suitable for domestic purposes, can be used for stock or irrigation. Artesian wells are yearly bringing larger areas under cultivation.

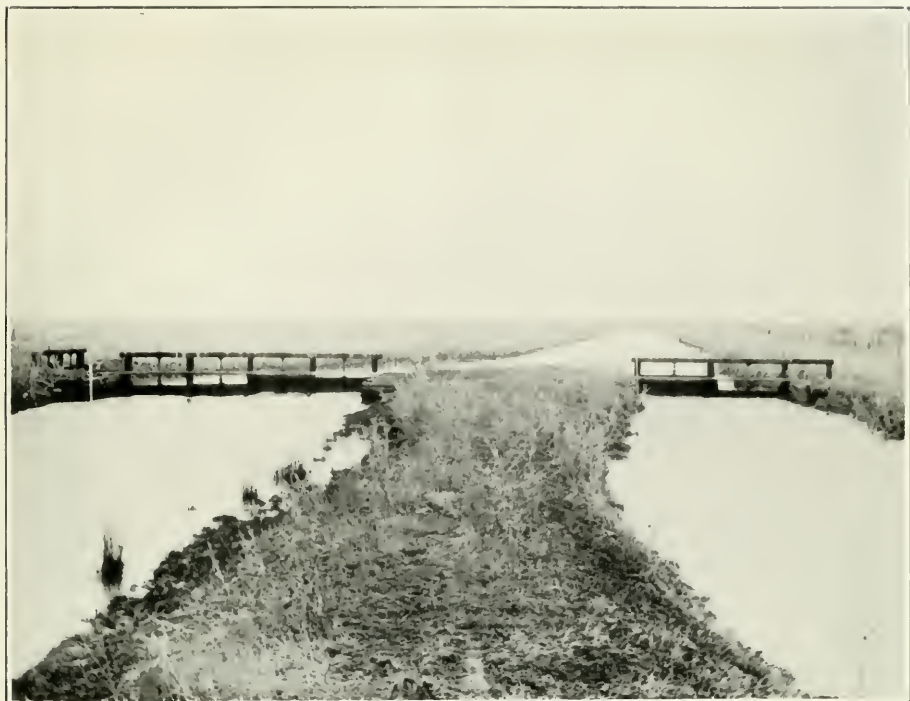
TOWNS' WATER SUPPLY.

Numerous
New Works.

A great deal of work is now proceeding in connection with the water supply of large towns. Most of the systems are being enlarged, and to deal with the extensions in detail would occupy a great deal of space. A few notes on the various systems in Australia, however, might be of interest.

The Wonder-
ful Goldfields
Supply.

One of the most interesting and daring pieces of engineering is that successfully carried out by the Western Australian Government at the instigation of Sir John Forrest, G.C.M.G., namely, the Coolgardie and Kalgurlie goldfields water supply. When the rush to these fields set in during the few years following Bailey, Ford, and Hannan's wonderful discoveries in 1892-3, the greatest difficulty was experienced by the Western Australian Government and private companies in supplying the fields with water, not only for drinking and sanitary purposes, but also for the production of gold. Works of a varied character were established for temporarily overcoming the water difficulty, including the construction of artesian wells, reservoirs, tanks, lakes, lagoons for the conservation and production of water, and the erection of condensers, but the fields developed so rapidly—as, indeed, did the whole belt of country in that direction—that the Government were compelled to make some permanent and adequate provision in



VIEW OF IRRIGATION CANALS.



V-SHAPED LEVELLER AND DITCHER AS USED FOR PREPARING LAND FOR IRRIGATION.

IRRIGATION IN VICTORIA.

the interest of the development of that part of the State, as well as of the gold industry itself. So it was decided to construct a weir across the Helena River near Mundaring, some 25 miles from Perth, and pump the water from there through a pipe line to the goldfields, a distance of 351 miles. The weir is certainly a fine piece of work, built mainly of concrete. It dams a valley 760 feet wide, and holds back a volume of water measuring some 4,600,000,000 gallons. There are eight pumping stations along the principal main, which is 30 inches in diameter and made of steel. The goldfields and districts are supplied from a main service reservoir 1,200 feet higher than the Mundaring weir. These pumping stations deliver to that main reservoir every day no less than 5,000,000 gallons of water. This enormous body of water weighs approximately 23,300 tons, is raised 1,200 feet, and pumped a distance of 351 miles—a gigantic daily service! Water is supplied to the consumers wherever required along the main pipe line, and is a great factor in assisting the settlement of the country through which it passes. It will also prove an important factor in the future construction of the great railway that will, before many years are passed, connect Western Australia with the other States. The undertaking was initiated in 1896, and was formally opened in 1903, the total cost amounting to £3,078,500. Nine years before its completion practically the whole of the territory served by the water supply was unoccupied and unknown, and now, within a radius of 30 miles from the main service reservoir, there is a population of over 70,000 people, with railways, tramways, and all the conveniences, and even luxuries, of civilised life. The name of the great designer and builder of this work, the late Mr. C. Y. O'Connor, C.M.G., will long be remembered in engineering history for the boldness of his conception and the masterly way in which he realised it. It was gratifying to note that the bulk of the machinery used in this scheme was of British manufacture.

Gigantic
Daily
Service

The main source of supply of the Perth water-works is the Victoria reservoir, situated in the Darling

Notes on
Various
Systems.

range, seventeen miles outside. It has a capacity of 212,000,000 gallons. Fremantle is supplied from a bore-hole, but the water obtained has to be treated with lime and aerated before use.

Sydney.

The water supply of Sydney, which amounts to 22,000,000 gallons a day, is taken from the Prospect and Cataract reservoirs, 21½ miles and 66½ miles respectively distant from the city. The Cataract Dam (here illustrated), was only completed last year and is a fine piece of engineering work, the length being 811 feet, height above foundations 192 feet, and having a capacity of 21,411 million gallons.

Melbourne.

The Melbourne supply consists of two main systems, the Yan Yean and the Maroondah. The Yan Yean reservoir is 22 miles from the city and has a total capacity of 6,400 million gallons. In the Maroondah system the water is obtained from the Watts River and the storage capacity is 2,000 million gallons. The dam at present in use is a temporary one, the permanent wall being now about to be commenced. Water through this reservoir is led through an aqueduct 41 miles long to the Preston reservoir, where it joins the Yan Yean system. Over 3¾ million pounds sterling has been spent on this scheme, which, will have to be considerably enlarged in the near future. One million pounds sterling is now being raised by the Metropolitan Board of Works to start these new works.

Other Works.

The Adelaide supply system includes three storage reservoirs, having an aggregate capacity of 3,895 million gallons, while there are in addition tanks used in connection with springs and pumping stations. Equally interesting schemes concern the water supplies of Brisbane and Hobart, as well as many of the New Zealand cities.

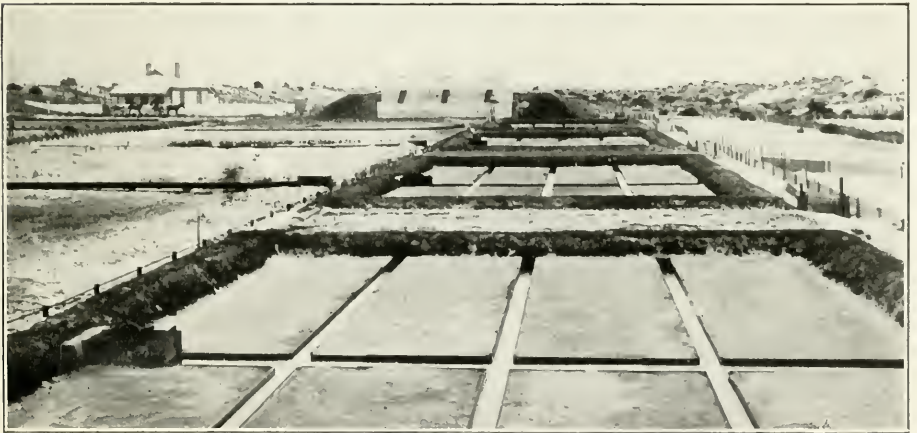
Some idea, of the extensive market that exists in Australia for waterworks plant and small pumping sets of all descriptions driven by electricity, steam, oil, or gas engines may be gained from the following list of works for country towns in New South Wales now under construction, definitely projected and under contemplation. These items have been extracted from



THE MUNDARING WEIR FROM WHENCE THE KALGURLIE WATER SUPPLY IS PUMPED A DISTANCE OF 350 MILES.



CONCRETE DAM OF BAROSSA WATERWORKS, SOUTH AUSTRALIA.



FILTER BEDS AND SEPTIC TANK OF GLENELG SEWAGE WORKS, SOUTH AUSTRALIA.

SOME PUBLIC WORKS IN AUSTRALIA.

the last Report of the Public Works Department of New South Wales.

Lithgow.—The additional service main, comprising 46½ chains of 15-inch and 3·37 miles of 12-inch cast-iron pipes was completed, and the new concrete dam across Farmer's Creek up-stream of the existing dam is in hand. This dam, which will be about 84 feet high, and curved in plan to 100 feet radius, will impound 88,000,000 gallons of water. These additional works were rendered necessary by the extensive development of manufacturing industries at Lithgow, including the new iron smelting and rolling works.

Water
Supply
Works under
construction
in N.S.W.

Warren.—The natural pressure of the artesian water with which the town of Warren is supplied being now too low to give a good service, contracts were let for pumping machinery worked by an oil engine to raise the water into a new 20,000 gallon steel tank elevated on a timber stand 50 feet above ground level.

Hunter District Water Supply.—A portion of the 20-inch pipes required for a supplementary supply main, 10½ miles long, between the Buttai and Wallsend reservoirs, were cast and delivered in readiness for laying.

Medlow.—A concrete weir, about 60 feet in height and curved in plan to a radius of 60 feet, is being constructed across Wall's Creek near Medlow Baths. It is eventually intended to use the reservoir thus formed, which will contain 67,000,000 gallons, for the water supply of Blackheath, as well as Medlow and any future settlement in the neighbourhood.

Waterfall Benevolent Institution and Hospital.—The works for supplying water to the new Institution near Waterfall are approaching completion. The water will be raised from Waterfall Creek at the rate of 4,200 gallons per hour by a pump worked by an oil engine and forced through a 4-inch rising main 53 chains long to a "Monier" reservoir, 29 feet 9 inches in diameter and 15 feet 8 inches deep, holding 58,000 gallons, the maximum lift being 530 feet. The reservoir is elevated on a ferro-concrete support, 24 feet above ground level. A 6-inch service main 25 chains long conveys the water to the Home.

Morisset Asylum.—Some of the works for supplying the proposed new Asylum for the Insane near Morisset were let by contract, and a portion will be done by day-labour. A low earthen dam will be constructed across the Duck-hole Creek, and the water pumped through a 6-inch rising main about 70 chains long to a hill commanding the site, on which a small service reservoir will be constructed, and the water thence conveyed to the Asylum by about half-a-mile of 6-inch pipes.

Projected
Water
Supply
Works in
N.S.W.

Plans were completed and contracts accepted for supplying the following towns with naturally filtered water to be pumped from the underground sand and gravel drift near the rivers on which they are situated, viz. :—*Cowra.*—From a well to be sunk near the left bank of the Lachlan River. *Gunnedah.*—From a well to be sunk on the flat adjoining the right bank of the Namoi River. *Gundagai.*—From a well to be sunk near the right bank of the Murrumbidgee River.

Port Kembla.—Plans were completed and tenders invited for the necessary pipe-lines and service reservoir for the supply of Port Kembla and the villages of Figtree and Unanderra, as well as shipping and various manufactories with water to be taken from the main pipe-line in connection with the Wollongong water supply.

Mittagong.—Plans and estimates were prepared for the proposed pumping scheme from Nattai Creek.

Lismore.—Plans and estimates were prepared for the proposed additional pumping machinery, rising main, and service reservoir. The water will be pumped from Wilson's Creek as at present.

Ballina.—Contracts were accepted for a concrete service reservoir, and an extension thereto of the main pipe-line by which the town is now supplied by gravitation.

Investiga-
tions and
proposed
Works in
N.S.W.

Preliminary investigations were made with a view of supplying the following towns with water, or adding to existing works :—

Canberra.—A cursory examination was made of the Cotter River, which was considered, pending a proper survey, to be the best source from which to obtain a

water supply for the proposed Federal capital site at Canberra about 8 miles from Queanbeyan.

Singleton.—Borings and estimates were made in connection with the proposed pumping scheme from the water-bearing drift, close to the Hunter River.

Narromine.—Borings were made in connection with the proposed pumping-scheme from the underground drift, but it was decided to postpone further action until the council has installed a proper system of sanitation.

Inverell.—Alternative schemes for supplying the town (a) by gravitation, and (b) by pumping from the McIntyre River, were investigated and partly surveyed.

Grafton.—An investigation was made in conjunction with the Department of Public Health as to the best site for a well in connection with the proposed scheme of water supply by pumping from the underground drift.

Cowra, Gunnedah, Gundagai, Tamworth, and Junee.—At these places borings and other tests were made of the water-bearing drift, from which it is proposed to draw naturally-filtered water.

Temora.—An investigation was made as to the best scheme of water supply, and an estimate of cost of a provisional stand-pipe supply furnished.

Hawkesbury Agricultural College.—A proposal and estimate was made for pumping water by electricity from the Hawkesbury River for domestic use and irrigation.

Richmond District.—A scheme for supplying the towns of Richmond and Windsor and the Agricultural College, as well as irrigating a small area with water brought by gravitation from a large storage reservoir on the Burrellow Creek, a tributary of the Grose River (including the generation of power), was investigated and surveyed.

Murwillumbah.—Further investigation was made as to the best source from which to supply this town.

Dubbo.—A proposal to lower the pump-well so as to increase the present rate of infiltration was investigated and estimate of cost prepared.

Manilla.—A scheme for supplying this town with water pumped from the Namoi River was prepared.

Taree.—A survey was made and estimate prepared of the cost of pumping and distributing a small supply of water for fire, flushing, and garden services from a storage to be formed by an earthen dam across Brown's Creek, a tributary of the Manning River close to the town.

SEWERAGE SCHEMES.

New South
Wales.

Parramatta Sewerage.—Surveys and plans for the Parramatta Sewerage Scheme have been completed and tenders will shortly be called for.

Bathurst Sewerage.—Estimates of the capital and annual cost of sewerage schemes with treatment works at these sites have been prepared.

Goulburn Sewerage.—A survey has been made for the sewerage of the city of Goulburn, and plans and sections for the scheme are well advanced.

Wagga Sewerage.—An inspection has been made of the town of Wagga and surveys for sewerage have been carried out. The flatness of the site of the town will necessitate the pumping of all the sewage. In the designs prepared it is proposed to split up the area into districts, each draining to a central pumping station. The sewage will be delivered through rising mains to treatment works in the police paddock fronting the Murrumbidgee River to the north of the town, where, after passing through septic tanks and filters, the effluent will be used for irrigation.

Katoomba Sewerage.—The increase of population in the municipality of Katoomba has caused the council to ask the Department to prepare a sewerage scheme for Leura and Katoomba. A complete survey has been carried out, and plans and estimates are in progress. It is proposed to construct three septic tanks, two above the Leura Fall and one above the Katoomba Fall, and to convey the tank effluent in cast-iron pipes to natural filters below the Falls. This arrangement, although costly, is the only means to prevent pollution of the creeks.

Berrima Gaol Sewerage.—The collapse of a drain at Berrima has led to an inspection of the drainage of the Gaol, which proves to be faulty. A new system of

sewerage and storm-water drainage has been designed and put in hand.

In connection with drainage schemes, it might be mentioned that works are about to be commenced in several new sections within the Perth and Fremantle areas. These include the Mount's Bay Storm Water and Claisebrook main drain (3rd section), Claisebrook drain (2nd section), Fremantle main sewer (2nd section), and Howard's Street storm water drain, Fremantle. In connection with these and various other works, plant and material will be purchased locally.

Western
Australia
Schemes.

There is little calling for special comment on the sewerage systems in large towns. In the majority of cases, as the towns are on the coast line, the discharge is into the ocean. There is an interesting project in connection with the Sydney sewerage system that will shortly be commenced. It relates to the southern section, where, at the present time, the sewage collected discharges into what is known as the Botany Sewage Farm, situated on a sandy peninsula at the junction of Botany Bay and Shea's Creek, and is there dwelt with by precipitation and intermittent downward filtration; but, owing to the growth of the suburbs adjoining the farm, this method has become objectionable, and a proposal was made to abandon the farm and discharge the sewage into the ocean through a sewer about six and a half miles long. A gravitation sewer has been decided on, which will connect with the existing sewers at the Botany sewage farm, from which it will be laid on a grade of 1 in 3,650 across undulating country to discharge into the Pacific Ocean at a rocky headland on the north side of Long Bay. The grade will terminate at an air shaft near the sea cliffs, where the invert will be 2 feet 6 inches below high water spring tides. From the air shaft two short outfall tunnels will lead the sewage into the ocean 20 feet below high-water spring tides, the soffit of each tunnel at point of discharge being through the face of a submerged cliff. Starting on the Botany sewage farm, there will be a duplicate sewer 6 feet 5 inches by 5 feet to Cook's River, constructed partly in aqueduct and partly in trench. The sewer crossing of the river will be carried out as in an inverted

Large
Scheme at
Sydney.

syphon, and, in order to prevent obstruction to its soffit, will be 15 feet below low water spring tides. The duplicate sewer will continue partly on a concrete and brick aqueduct and partly in trench to twin tunnels, to be constructed through about one mile of water-charged sand hills. The overburden through the wet sand will range from 20 feet to 70 feet. The outside diameter of these tunnels will be about 8 feet, and it is proposed to use shields, driven by hydraulic pressure, in the construction of this portion of the work. After passing through the wet sand country, the twin tunnels will converge into a single sewer 13 feet 9 inches by 7 feet 10 inches, enlarging finally to 14 feet by 8 feet 8 inches, constructed partly in tunnel in rock and partly in trench in rock for a total distance of about two and a-half miles to the air shaft at Long Bay Headland. At this outfall special precautions to deal with the action of the ocean waves during storms will be taken; the two outfall tunnels will be constructed in the solid rock on a steep grade gradually diverging so as to form a V, with branches wide apart when finally discharging into the ocean at the vertical face of the submerged cliff. Under this scheme, the sewer, which will deal with the sewage from an area of about 26,000 acres comprised in the above-mentioned suburbs, and a probable ultimate population of 657,000 persons, is estimated to cost £452,400.

New Gas
Works.

The Wellington Gas Company will be shortly constructing new works on a large scale.

Apparel and Textiles.

Enormous
Market.

THE Australasian market, in the various kinds of goods which fall under the above heading, is one of considerable dimensions, amounting in 1907 to a value of over sixteen million pounds sterling.

Foreign
Competition.

Such official statistics as are available indicate that in the past five years British trade has substantially increased, whereas that of Germany, France, United States, and other foreign countries up to last year have

been increasing only to a very slight extent, and in some cases actually decreasing. Enquiries amongst the largest importing houses, however, show that competition is much keener than those figures would lead one to suppose, and the opinion is freely expressed that a considerable bulk of trade, classed in the returns as British, represents goods of foreign manufacture.

AUSTRALIAN TRADE.

For 1907 the total imports under this heading were no less than £12,500,000, and for the first six months of 1908 they amounted to a value of £5,800,000. According to Commonwealth statistics the imports of apparel and textiles from various countries for the years 1903-6 inclusive are as shown in the following table :—

COMMONWEALTH OF AUSTRALIA.

IMPORTS OF APPAREL AND TEXTILES, 1903-6

(excluding Boots and Shoes, Blankets, Hats and Caps, and Floorcloths).

Country.	1903.	1904.	1905.	1906.
	£	£	£	£
United Kingdom -	6,790,458	8,491,790	8,580,048	9,594,766
Canada - - -	15,327	20,656	21,150	24,123
Cape Colony - -	1,570	467	223	538
Ceylon - - -	1,760	1,154	1,515	1,733
Hong Kong - -	15,768	24,099	22,352	16,146
India - - -	4,206	3,851	5,098	10,083
New Zealand - -	6,627	9,785	8,186	8,181
Straits Settlements -	1,402	7,321	3,993	5,100
Other British Possessions	655	446	178	471
Austria - - -	4,199	226	3,865	2,341
Belgium - - -	28,514	41,572	46,374	62,047
China - - -	19,833	7,879	10,999	8,901
France - - -	112,667	44,347	100,285	63,002
Germany - - -	346,294	376,797	404,816	388,493
Italy - - -	7,514	5,817	9,708	14,061
Japan - - -	91,723	150,599	159,280	195,822
Netherlands - -	2,538	8,991	5,232	10,277
Switzerland - -	13,640	5,303	14,371	21,559
United States - -	134,249	110,913	131,640	155,940
Other Foreign Countries	625	236	1,061	629
	7,599,569	9,312,249	9,530,374	10,584,213

Total
Imports.

The above figures indicate steady growth in Canada's trade with Australia, the increase being from £15,327 in 1902 to £24,123 in 1906. In the same period Belgium's trade has increased from £28,514 to £62,047 and Japan's trade from £91,723 to £195,822.

Misleading
Statistics.

Beyond these small items these figures show that practically the whole of the increase of trade that has taken place in the period referred to has fallen to British firms, and would not indicate any serious inroads by foreign competitors. As I have already pointed out, however, they do not show the actual conditions of things, the proportion of foreign trade being undoubtedly very much larger than that shown above. This is borne out by the figures for 1907 kindly supplied to me by the Commonwealth Statistician. (See table on following page.)

Growth of
Foreign
Trade.

Here we find an enormous increase in foreign trade. I do not believe for a moment that this extraordinary growth has taken place in one year's trading.

Larger than
supposed.

This table confirms the impression I gained during my enquiries in the market, that we have been living in a fool's paradise. It has been fondly hoped, and the hope has been encouraged by official statistics and trade reports, that in textiles we were impregnable in the Australasian market, when all the time our competitors have been doing a very large portion of the trade.

I give in the following pages a few notes on various items of this trade :—

Increasing
Competition
in Piece
Goods.

As will be seen from the table on page 141, the United Kingdom holds the greater share of the trade in piece goods, but what manufacturers have to consider is the increasing severity of competition in almost every branch.

Cotton
Tweeds.

In cotton tweeds Continental manufacturers are steadily capturing the trade and the reasons given are that they more closely meet the demands of the market in regard to patterns and qualities.

Denims.

In denims practically the whole of the trade is in American hands and according to the statements of several importing houses, British manufacturers have not seriously attempted to manufacture any of these goods

COMMONWEALTH OF AUSTRALIA.
IMPORTS OF APPAREL and TEXTILES shown under principal COUNTRIES of ORIGIN. Year 1907.

Articles.	United Kingdom.	British Possessions.	France.	Germany.	Japan.	United States of America.	Italy.	Other Foreign Countries.	Total.
Feathers, Dressed -	£ 37,701	£ 329	£ 8,368	£ 2,618	£ —	£ 3	£ 43	£ 578	£ 49,640
Gloves -	48,168	1	54,464	111,137	—	1,018	26,310	41,117	282,215
Socks and Stockings:—									
Cotton	48,207	—	245	112,579	136	997	297	57	162,518
Woolen	348,307	330	581	8,665	44	148	20	126	358,221
Towels and Handkerchiefs	171,815	58	273	789	9,778	243	—	9,828	192,784
Trimmings: Mantle, Dress, &c.	78,637	102	63,137	91,890	599	400	3,360	87,908*	325,963
Minor Articles for Apparel	153,600	16	10,466	38,702	3,959	10,456	2,024	13,489	233,312
Umbrellas, &c., and Parts	52,484	34	124	1,292	41	191	64	413	54,743
Apparel and Textiles, n.e.i.	1,040,855	8,631	40,169	270,779	38,826	85,374	322	62,939	1,547,785
Costes, Cushions, Furniture, Drapery, &c.	167,293	2,366	5065	34,312	5,432	2,222	92	18,597	235,379
Curtains	75,832	542	1,526	9,995	215	1,011	59	9,022	98,202
Frillings	7,680	—	427	853	—	6	—	604	9,570
Nats	8,923	9,398	20	1,265	5,144	311	61	1,000	26,122
Piece Goods:—									
Canvas	107,792	7,664	1	38	677	4,711	—	191	121,074
Cotton and Linen	3,260,523	10,090	20,158	80,458	5,849	170,029	2,201	77,350	3,626,658
Flannelettes	228,210	4,419	393	17,590	—	7,531	846	19,778	278,827
Hessians	47,840	201,960†	—	111	—	57	—	—	249,968
Horsehair and Hop Cloth	27,959	—	—	936	—	26	—	1,540	304,61
Silk, or containing Silk	106,008	2,043	236,796	73,550	202,213	59	53,786	229,393†	903,848
Velvets, &c.	235,214	443	161,439	243,355	1,755	518	781	206,555§	850,060
Woolens:—									
Flannels	40,876	872	10,161	3,895	11	1,474	1	1,149	58,439
Free Woollens	39,771	87	25	856	—	14,547	—	135	55,421
Other	1,808,277	1,975	244,965	143,383	46	6,151	835	29,793	2,235,425
Rugs, Rugging, and Lap Dusters	50,696	5,307	4,594	2,071	2,644	448	1,895	2,204	69,949
Sewing Silks, &c.	317,519	7,476	116	1,343	208	34,718	—	386	361,766

* Switzerland. £79,638.

† India, £

‡ Includes Switzerland. £189,809.

§ Includes Switzerland. £192,499.

suitable for the market. This is an increasing trade and one in which the United States has specialized, as one finds that they also do a large trade in similar goods in South Africa and India.

Woollens.
Growing
Local
Industries.

Manufacturers will be indulging in rank ostrichism if they do not reckon upon increased competition in the near future from local industries in the Australian and New Zealand markets. The prospects of starting industries under the new tariffs are undoubtedly good, and on the occasion of my visit the establishment of mills with the most modern equipment was being arranged for in New South Wales and discussed by capitalists in South Australia and Western Australia, in which latter State there is no mill at the present time. A company, with a capital of £100,000, is about to build and equip a woollen factory in New South Wales, the principal having recently visited Great Britain and Europe and made arrangements to purchase machinery and appliances to the value of £35,000. Local productions under this heading have an excellent reputation in Australasia, where the sentiment in favour of locally made goods is a very real factor in business.

Blankets.

I have dealt elsewhere with the total importations into Australasia, and there is no doubt that the imports of woollen piece goods, flannels and blankets will further decline as these new local mills become established. In blankets and blanketing the United Kingdom, in 1907, contributed £47,193 out of a total of £54,286. This is according to official statistics, but, from the information I gathered, foreign countries contribute a larger quantity than that with which they are credited.

Australasian
Mills.

There are about 24 woollen and tweed mills in the Commonwealth at the present time, employing about 2,500 hands. The mills established in New South Wales and Victoria alone produced 1,338,813 yards of tweed and cloth in 1906, and 3,645,132 yards of flannel and 321,971 blankets, shawls, and rugs in the same year.

In 1906 the mills in New Zealand used nearly four million pounds of wool, of Victoria 3,484,000 pounds, Tasmania 1,067,000 pounds, and New South Wales 426,000.

A Sydney house states : "For all-wool dress goods Dress Goods.
France and Germany does the bulk of the trade of
Australia. Bradford cannot compete with the foreigner,
either for finish, dye or value, except in the manufacture
of alpacas, and Sicilians."

In cotton hosiery Germany contributes the largest Cotton
Hosiery.
portion of the trade with £94,014 against £53,766 from
Great Britain in 1906, and £112,579 against £48,207
in 1907. It will be seen that while the British share
declined by over £4,000, Germany's share increased by
over £8,000 on the year's trading. The British manu-
facturers hold practically the whole trade in woollen
socks and stockings, contributing £348,307 out of a
total of £358,221.

The same position occurs in regard to cotton or Towels and
Handker-
chiefs.
linen towels or handkerchiefs, where the British portion
is £180,724 out of a total value of £199,044.

It is not surprising that the larger portion of Trimmings.
trimmings, &c. should be purchased by Australia from
Continental houses, as this is a branch of manufacture
in which our neighbours stand very high. Germany's
contribution under this heading, in 1907, was £91,890 ;
Switzerland, £79,838 ; France, £63,137, as compared
with the United Kingdom, £78,637.

For many years the Germans have had the bulk Lace.
of the lace trade of Australia. A Sydney house
states :—"We have repeatedly pointed out to our
Nottingham friends, both through our London house
and to visiting representatives of Nottingham houses,
that they were letting the Germans have the largest share
of the lace trade and were making no efforts to take
it from them. We have sent patterns and prices to
show what Germany was doing, but all to no purpose.
Take, for instance, the Torchon lace trade. Even to-
day Germany takes more orders than England as far
as New South Wales and Victoria are concerned. The
Nottingham manufacturers, with two or three excep-
tions, will not make what we want for our market.
The ordinary Nottingham Torchon laces are good and
saleable, and we import them largely, but everyone
sells far more of the German makes. The Nottingham
manufacturers should at once erect the latest German

machines, bring out the newest patterns (as made in Germany), and they could win all the trade, as they have now a 5 per cent. preference. Messrs. — have introduced the new machines and are doing well with German Torchon lace. Then, again, take Guipure laces and insertions, and Guipure on net, &c., &c. We have not been able to buy these in England. Hundreds of thousands of pounds have been sent to Germany (Plauen, Saxony, &c.), which is, and has been, the 'home' of these goods. Even England buys largely there. These goods could all be made in England if the manufacturers would get the right machines. There are hundreds of makers of these goods in Germany. England, for some reason not known to us, has never attempted to capture the trade."

Embroideries.

"The Swiss have the bulk of this trade. We much prefer to buy British goods, and will always give them preference, but we must have the lines the public demand or lose our business. The writer, in 1904, visited Nottingham for the first time, and ventilated the above matters. Makers informed him that they had made their trade in the past on the makes of lace that they were then turning out, and considered them better than the German, and there seemed to be no desire on their part to change, or to add new German machines. In one factory visited the newly-imported German embroidery machines were working night and day, and hundreds of the old machines were lying idle. The writer also looked in the principal shop windows in Nottingham, and did not see more than £15 or £20 worth of Nottingham laces showing, but hundreds of pounds worth of foreign laces. The factory girls leaving work were closely observed, and German lace was more in evidence as a trimming on their dresses or as collarettes round their necks than Nottingham laces."

Hats and
Caps.

The greater part of the demands of the Commonwealth for these goods is manufactured locally, and there is even a steadily increasing export trade to neighbouring markets. There are 61 factories with over 2,500 hands.

Gloves.

Foreign competition threatens to completely oust the British manufacturer on the Australian market. Out

of a total importation in 1907 of £282,215 our share was only £48,168, while Germany contributed to the value of £111,137, France £54,464, Italy £26,310, and other foreign countries about £42,000. While am aware that conditions of manufacturing at home and shipping rates are adverse to the British manufacturer, the loss of trade under this heading is due in a large measure to want of enterprise. Long gloves have recently been much in demand, but British firms would not supply them. One of the largest importers in South Australia is emphatic in his opinion that this trade is being lost in a large degree through apathy on the part of our firms.

NEW ZEALAND.

The comments which I have made on Australian Imports. trade apply to a large extent to that of New Zealand, in which country in 1907 goods were imported under the heading of Apparel and Textiles to the value of £3,746,495.

It would be waste of time to discuss the extent of Foreign Competition. foreign competition in New Zealand as indicated by either the figures published by the New Zealand Government or of those by our own Board of Trade, for in my opinion they are entirely misleading except as so far as they indicate the country of shipment. According to the New Zealand figures, foreign countries last year supplied goods under this heading to the value of £213,958! A more approximate figure would be £800,000. In cotton lace, hosiery, gloves, cheap flannels, velveteens, denims, silks, trimmings, and many other lines, foreign competition is extremely severe, and the above classes of goods to be found in New Zealand warehouses are largely of foreign manufacture.

In cotton and woollen piece goods, linens, blankets, British Goods preferred. and many other substantial lines, our manufacturers undoubtedly hold their own, and this is practically the case in all goods of better quality.

Machinery and Metal Manufactures.

A Great
Market.

NEXT in importance to textiles comes that of machinery and metal manufactures, of which Australia and New Zealand imported in 1907 a value of no less than £13,500,000.

New
Countries
dependent
on the
Engineer.

New countries like those comprising the Australasian market are singularly dependent for their development on engineering. The clearing of land, and subsequent operations of tilling, sowing, reaping, and preparing products for market are processes which year after year employ an increasing quantity of machinery. Towns are springing up in newly settled areas, calling not only for railway communication, but systems of water supply, sewerage, lighting, tramways, &c.; some communities are growing up in dry areas to which water supplies have to be carried over long distances; irrigation works are needed to bring large tracts of fertile land under the plough; where railway transport is impossible traction engines are often employed; being largely dependent on overseas markets, extensive dock and harbour accommodation has to be provided, which calls for auxiliary machinery of various kinds. Having an abundance of raw materials of almost every kind, and national protective policies, local industries are growing and new works are being established almost every week, necessitating the employment of machine tools, automatic machines, and all the other products of the engineer that are called for in the equipment of the modern factory.

Labour-
saving
Machinery a
necessity.

Australasia is undoubtedly in a highly prosperous condition at the present time, and with such a scarcity of labour as at present exists in practically every industry, labour-saving machinery is resorted to wherever possible.

The Market
and Com-
petition.

Before noting the peculiar features of various branches of trade under this heading, it might be well to take a glance at the extent of the market and the condition of foreign competition.

AUSTRALIAN TRADE.

To refer, in the first place, to Australia. The total Australia's importations of the Commonwealth in 1907 are shown Purchases. in the following Table :—

COMMONWEALTH OF AUSTRALIA.
IMPORTS OF IRON AND STEEL AND MANUFACTURES THEREOF, INCLUDING MACHINERY, &c.
SHOWING PRINCIPAL COUNTRIES OF ORIGIN. YEAR 1907.

Articles.	United Kingdom.	British Possessions.	Belgium.	France.	Germany.	United States.	Other Foreign Countries.	Total.
Iron and Steel :—	£	£	£	£	£	£	£	£
Pig	162,815	16,621 ^e	—	—	938	167	52	180,593
Bar, rod, angle, tee	475,748	—	31,148	1,947	47,434	37,135	6,438	590,850
Hoop	44,513	—	5,893	60	16,137	3,361	173	63,137
Ingot, Blooms, Slabs, &c.	10,470	—	15,095	—	12,630	1,721	—	39,916
Scrap	44,989	5,193	53	—	494	24	—	50,753
Girders, Beams, Bridge Iron, &c.	64,366	—	9,329	10	6,074	13,672	—	93,451
Plate and Sheet, Galvanised	1,279,440	—	145	—	856	75,556	—	1,355,997
Plate and Sheet, not galvanised	179,948	—	28,030	1,791	62,846	13,664	32	235,691
Machines and Machinery :—								
Cash Registers, Computing Machines, &c.	2,218	—	—	—	402	20,192	—	22,812
Cream Separators, &c.	16,787	154	17,954	—	14,570	18,433	87,702†	155,600
Engines :—								
Fire	1,591	—	—	—	—	67	—	1,658
Gas and Oil	113,035	345	534	1,895	682	35,891	1,030	153,412
High Speed and Turbine	3,254	—	—	—	—	164	—	3,418
Portable and Traction	82,413	1	—	—	490	33,735	3,341	119,980
Other	92,336	529	1,674	782	6,755	17,638	181	119,915
Mangles, Clothes Wringers, &c.	5,355	57	76	—	90	13,956	—	19,534
Electrical and Appliances	195,631	105	6,198	3,929	27,271	117,868	59,197‡	410,229
Mining	52,814	9,893	20	360	17,536	41,030	—	121,653
Machine Tools	105,552	127	443	1,993	13,454	83,632	1,030	206,231
Printing	61,475	5,069	—	—	6,368	81,135	103	154,090
Sewing, &c.	12,769	103	—	—	43,798	132,578	5	189,364
Typewriters	4,756	1,811	—	31	866	56,868	—	64,301

† Includes Sweden, £82,502. ‡ Includes Sweden, £54,527.

^e India.

(Continued on next page.)

Foreign
Competition.

This Table, it will be seen, also indicates to some extent the condition of foreign competition for the various items of trade referred to, but it must be borne in mind that although the countries of origin are

COMMONWEALTH OF AUSTRALIA—continued.

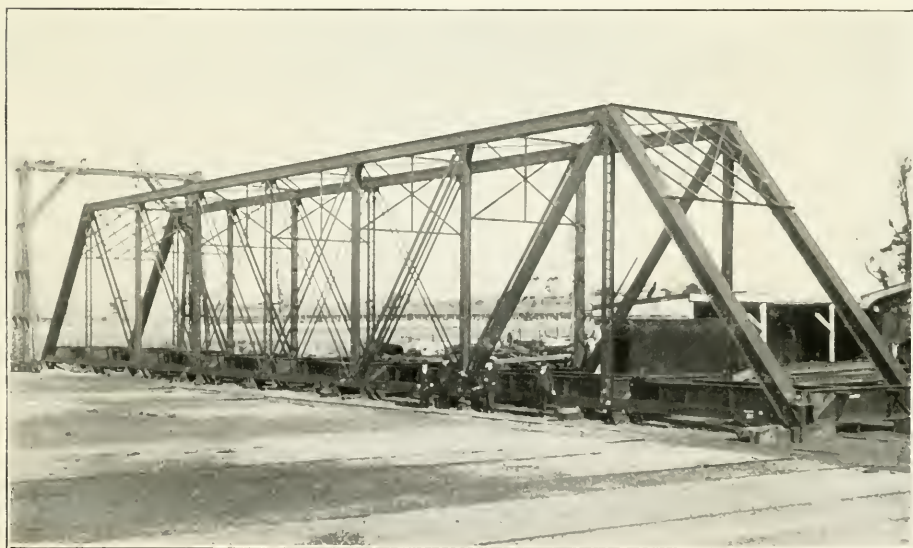
Articles.	United Kingdom.	British Possessions.	Belgium.	France.	Germany.	United States.	Other Foreign Countries.	Total.
Machines and Machinery—cont.								
Weighing Machines, &c.	£ 29,603	£ 276	£ 5	£ 180	741	£ 11,168	£ 195	£ 42,168
Other Machines	647,807	6,932	2,767	4,788	50,743	258,802	4,007	975,846
Implements, &c., Agricultural	48,128	167,515*	29	180	1,668	183,717	665	401,902
Manufactures of Iron and Steel:—								£ 2,211
Anchors	2,475	12	—	—	1	23	—	£ 2,508
Axles and Springs	108,903	114	721	20	2,174	27,644	4	139,580
Bolts and Nuts	61,586	187	816	2,467	2,781	6,954	91	74,882
Chains	47,041	271	123	90	1,848	6,439	4	55,816
Cutlery	131,824	11	131	390	23,327	10,258	177	166,118
Nails:—								
Horseshoe	3,129	—	79	—	2,375	1,480	5,007	12,070
Other	35,207	18	591	—	15,677	21,420	381	73,294
Netting—Wire	400,708	—	2,943	773	173,645	2,920	692	581,681
Pipes and Tubes	374,786	150	163	40	36,228	67,000	2,239	480,606
Rails, Fish Plates, &c.	562,610	—	19,599	240	37,969	7,705	808	628,931
Saddlers, &c. Materials	19,746	—	—	3	93	1,947	—	21,789
Tanks	19,726	—	—	—	76	—	24	19,826
Tinned Plates	247,650	—	—	—	101	1,028	—	248,779
Tools of Trade	219,997	4,053	440	1,851	22,395	228,276	1,201	478,123
Wire:—								
Barbed	8,446	—	5,794	—	—	39,980	—	54,220
Iron and Steel	52,365	2,190	2,736	—	351,700	132,038	886	541,915
Other	96,335	16	570	35	19,899	15,394	21	132,270
Lamps and Lampware	60,755	61	115	693	39,339	41,080	9,078	151,121
Motors, Bicycles, &c.	332,982	23,956†	4,672	60,898	12,668	38,236	9,832	483,244

* Includes Canada. £164,260.

† Canada. £23,902.



VIADUCT AT MITCHAM ON THE ADELAIDE-MELBOURNE RAILWAY.



BRIDGE BUILDING AT THE CLYDE ENGINEERING WORKS, SYDNEY.

BRIDGE WORK IN AUSTRALIA.

given, so far as the Commonwealth Customs Department is able to ascertain them, the proportion of foreign trade is really much greater. I discovered numerous instances of foreign goods being introduced as British, and the principal reason for this is that it has been largely the practice of Continental manufacturing firms to grant exclusive agencies to firms established in England with the right to cover the English Colonial markets. In some cases a certain amount of work was being put on these machines in England, and they were actually being introduced as English-made goods entitled to preferential treatment under the tariff. The Manufacturers' Association has now taken up this matter with the Commonwealth and other Colonial Governments with a view to raising the proportions of British labour which must be expended on goods to entitle them to the preference and thus prevent foreign goods taking advantage of it. The proportion in the case of Australia and other Colonies is at present 25 per cent., which is much too low to retain the advantage exclusively to British goods. Official statistics themselves, however, obscure as they are, indicate a sufficiently serious condition of foreign competition for Australian trade.

Qualification
for Pre-
ference.

This competition is severer in engineering and machinery than in any other branch. Germany and the United States are our greatest competitors. During the past twenty years the total increase in this class of trade to Australia was £2,741,774, of which £1,068,320, or 38·96 per cent., was from the United States; £831,482, or 30·33 per cent., from Germany; and £527,988, or 19·26 per cent., from the United Kingdom.

Growth of
Foreign
Trade.

There was a large increase in Australia's purchase in 1907 as compared with 1906. While some of it was undoubtedly due to increased purchasing power of the market, so large an increase must be attributed to buying in anticipation of the higher tariff which has since come into force.

The reader will find a considerable amount of information concerning openings for trade in various branches of engineering in the chapters dealing with

railways, docks and harbours, irrigation, irrigation water supply, and other works, hardware and motor vehicles respectively, but the following notes on other items of the iron and steel and machinery trades might prove of interest.

Local
Industries.

There is probably more competition to be looked for in the near future from local industries than in any other line of trade, excepting perhaps "Wearing apparel." I have referred to this feature of the question in other parts of this Report and some idea of what is being accomplished in railway engineering is given in the section dealing with that subject. Australia has succeeded in establishing engineering industries of considerable output and with the increased advantages of the new tariff and the protection of sea-carriage there are going to be established in the near future many more engineering works in practically every State. The disadvantage under which these industries have hitherto been working is that raw and other materials have had to be imported. Attempts have been made to establish iron and steel works on a scale sufficient to deal with local requirements and the Lithgow works though closed for a short period are now running again and turning out a fair quantity of material, but little will be done in this direction until industries are supported by generous bounties as well as by tariff duties, as has been done in Canada. A Bill has been before the Commonwealth Parliament for a long time to deal with this matter, but was not finally approved at the date of writing this Report.

Engineering
Materials.

The imports of bars, rods, blooms, slabs, girders, joists, plates and sheets, galvanised and otherwise, increased from £2,075,000 in 1906 to £2,655,000 in 1907. Our largest competitor for this class of trade is the United States, from whom we must expect increased competition during the next few years. Germany follows next, with Belgium contributing a substantial quantity. The trade is, of course, principally British at the present time, but it will be an increasingly difficult matter to retain our hold of it.

Machinery.

The total imports of machines and machinery, excluding agricultural machinery, in 1907 was £2,754,000,

as compared with £2,018,000 in 1906. It will be seen, from the table given on page 147, what a large amount of competition there is for this trade, and again I would remind the reader that the British items includes a good deal of foreign machinery.

The total importations in 1907 amounted to a value of £206,231, of which I would estimate that the United States contributes half, while the German contribution is about £15,000. It is German competition that British firms will mostly have to contend with in the near future as they are supplying similar classes of goods to ourselves while the American trade is largely in tools that we do not specialise in.

Machine
Tools.

Of the £154,090 worth imported in 1907, the United States contributed £81,135, while the British portion was £61,475. There is no peculiar feature concerning this trade that calls for special comment. The conditions of competition are practically the same as those which have to be met in our home market where an increasing amount of American machinery is being introduced every year.

Printing
Machinery.

The larger machines are chiefly British, but nearly all the smaller scales, and particularly automatic scales, are American.

Weighing
Machines.

The total importations of agricultural, horticultural and viticultural machinery in 1907 amounted to a value of £409,000, as compared with £282,000 in 1906. The United States and Canada contributed practically the whole of this trade, the contribution of the former being £183,717 and the latter £164,260. Great Britain's share was under £50,000. It is somewhat surprising that the British manufacturer does not seem to have made any serious effort to capture this trade, as the conditions are very similar to those met with in New Zealand and again in South Africa, so that in laying himself out to deal with Australian trade he would also have open to him other Colonial markets. What in future he will have to fight more than foreign competition will be local manufactures. Excellently equipped works are established in all the States, except Western Australia and Tasmania, where agricultural machinery is being turned out in large quantities.

Agricultural
Machinery.

Nearly 3,500 hands are employed in the various factories, and last year Australia exported to the Argentine, New Zealand and Cape Colony, and other countries, a considerable quantity of stripper harvesters, stump-jump ploughs, disc cultivators, corn shellers, baggers, drills and other implements, which have been developed locally to meet peculiar Australian conditions.

Some large
Local Firms.

The principal works are those of Mr. H. V. McKay in Victoria, where the world-known "Sunshine" harvester is produced, besides a whole range of implements. In New South Wales there is the large works of the Clyde Engineering Co., Ltd., who also make implements and machinery of all kinds. In South Australia there are the works of Messrs. James Martin & Co. of Gawler—all these are firms employing hundreds of men, and each turning out implements in large quantities.

Two
Wonderful
Machines.

Australian development owes much to the invention and subsequent improvement of two pieces of machinery, the "Stripper" Harvester and the "Stump-Jump" Plough. Both were originated by Australians and are evidence of the truth of the adage that "Necessity is the mother of invention," for they were brought into existence by two Australian farmers who were at their wits' end to deal successfully with the conditions of agriculture as they then existed. These machines are so widely used, not only throughout Australia, but South Africa, South America, Canada, and the United States, that a few words concerning their early development might not be without interest.

The
"Stripper"
Harvester.

The invention of the "Stripper" Harvester is ascribed to one John Ridley, a farmer and miller of South Australia. In 1843 a serious position presented itself to wheatgrowers through the dearth of labour to harvest the crops, and an extension of the industry was looked upon as impossible until some method of harvesting superior to the sickle came along. It was owing to these conditions that John Ridley built his machine on the principle of stripping the heads off the straw. The machine, of which I give an illustration from an old sketch, was at once a complete



AUSTRALIAN-MADE STRIPPER HARVESTER AT WORK. THIS MACHINE STRIPS, THRESHES, CLEANS, AND BAGS AT ONE OPERATION.



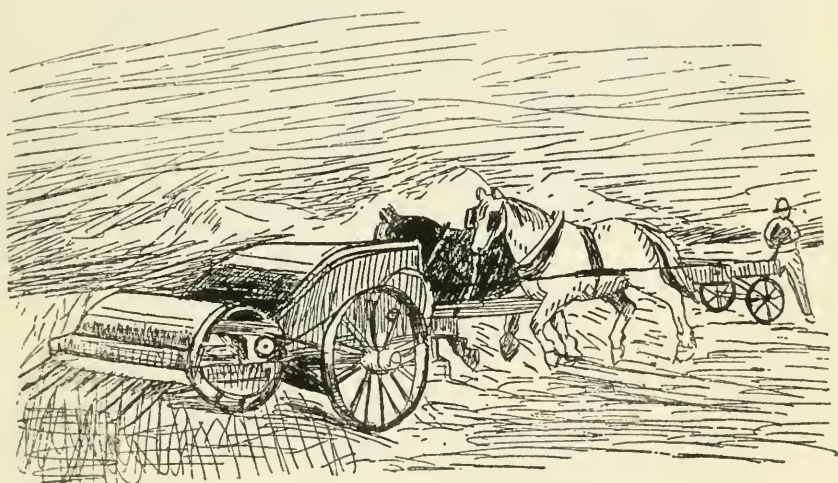
18-FURROWED STEAM PLOUGH AT WORK IN NEW ZEALAND.

FARMING BY MACHINERY IN AUSTRALASIA.

success. The first public trial is described by one Francis Dutton as follows:—

“One afternoon during the summer of 1843-4, some friends met in Adelaide and asked me to join them in their ride to a neighbouring farm where Mr. Ridley’s reaping machine, which they said both reaped and threshed the corn at the same time, was successfully at work. It was not generally known at that time what the machine was, and, although we were all incredulous, we started to see with our own eyes how far the reports we had heard were correct. Presently

First Public Trial.

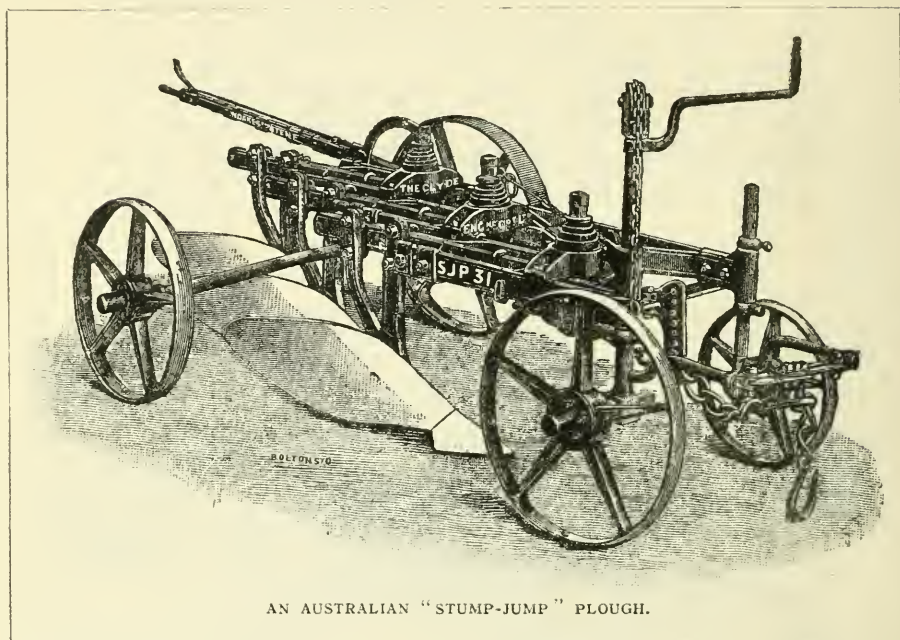


THE ORIGINAL "RIDLEY" STRIPPER HARVESTER. (FROM AN OLD SKETCH.)

we saw from several quarters other horsemen all steering to the same point. By the time we reached the farm a large 'field' had mustered to witness the proceedings, and there sure enough was the machine at work, by the agency of two horses and two men—one to guide the horses and the other the machine. There was no mistake about it; the heads of the corn were threshed perfectly clean, and a winnowing machine being at hand, the corn was transferred out of the reaping into the latter machine, and carts were ready to convey the cleaned wheat to the mill, two miles off, where the wheat, which an hour before was waving

Revolution
in Agriculture.

in the fields in all the lustre of golden tints, was by Mr. Ridley's steam mill ground into flour. Never before, perhaps, was such a revolution in the appliances of agriculture caused as was done by this machine ;



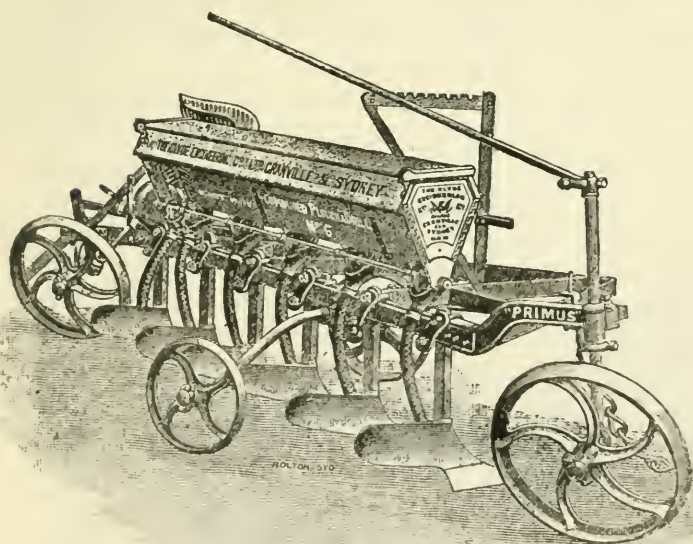
AN AUSTRALIAN "STUMP-JUMP" PLOUGH.

success attended the very first trial of it, and during seven days it reaped and threshed the seventy acres of wheat of which the paddock was composed." This demonstration had a remarkable effect upon agriculture, the area under wheat being nearly double the next year. It at once reduced the cost of harvesting from 2s. a bushel to 3½d. The principle of propulsion from behind soon gave way to a side application of power, as is shown in the illustration of the modern stripper, which strips, cleans, and bags the crop in one operation. As is the case with most inventions of this type, several minds were working in the same groove at that period, and there are various claims to the authorship of the stripper harvester, but it seems fairly clear that Ridley was the first to build a really practical machine.

When Australia was first settled wooden ploughs were commonly used, but these soon gave way to

2, 3, 4, and 5-furrow iron ploughs. When the mallee scrub lands were first occupied a new type of plough became necessary. Farming in these lands would astonish the farmers of England. Mallee scrub consists of light timber varying in size from whipsticks up to timber a few inches in diameter. At first the practice was to cut down the trees and grub up the roots, but this process proved costly and tedious. A man named Mullins cut down the trees on his scrub sections level with the ground, and taking a V-shaped log he drove long spikes through it. He hitched the horses on to the pointed end of the V-log, and dragged the home-made implement over the stump-covered field. The wheat thus scratched in did well, and the crop yielded a good return. There was no difficulty in working a reaping machine over

The Stump-Jump Plough.



AUSTRALIAN COMBINED PLOUGH AND FORCE-FEED DRILL.

the stumps and stripping the grain. This system of farming in the scrub country was termed "Mullinising." Its simplicity, cheapness, and effectiveness soon caused it to become popular. The V-shaped log, however,

soon gave place to improved implements of the stump-jumping class, and so perfect have these become that fields full of mallee roots below the surface can be cultivated as successfully as meadow lands. The brothers Smith, on Yorke's Peninsula, South Australia, were the first to invent and perfect the stump-jumping plough of the type that is so generally used to-day. More detailed information concerning the class of machinery which is being used in Australia may be obtained by manufacturers on application to the Manufacturers' Association.

Gas and Oil
Engines.

There is a good opening in Australia for gas and oil engines. The small paraffin engine suitable for use on a farm is being largely supplied by the United States. These are growing in favour and the market will repay English firms for any attention they may give to it. With the introduction of the metallic-filament lamp of the Osram type, with high efficiency and low voltage, there offers a splendid opportunity for the introduction of small gas and oil engine sets for electric lighting. There is a large and wealthy class of squatters in Australia who might be induced to purchase these sets for lighting their houses up country and there are also excellent opportunities for trade in smaller villages and towns.

There is an increasing trade in oil engines for launch work, but the bulk of the trade is going into American hands. The engine that is most favoured is rather of a heavy type with single cylinder of large bore and long stroke; the adapted British motor-car engine is not much favoured by Australians. This is going to be a very big line of business and worth specially catering for. Australia has magnificent harbours and a fine climate, and motor boating is rapidly growing in favour.

Producer
Gas.

I was glad to note that some English manufacturers were experimenting with various Australian coals for use in gas producers. I found several producers of one make using "Collic" coal, and there promises to be a big trade done in them in Western Australia with this fuel. Experiments are also being made with the brown coals of Victoria, which, if found suitable, will



PLOUGHING 30 FURROWS EACH TURN.



THE LATEST METHOD.

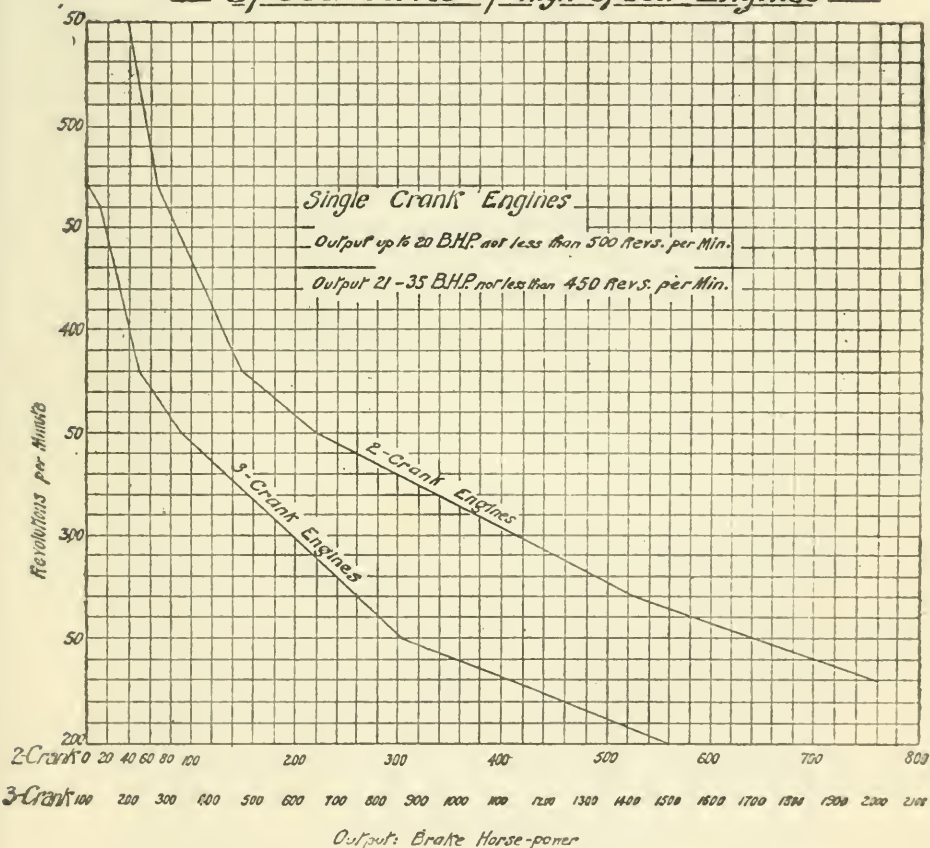
MODERN FARMING METHODS IN NEW SOUTH WALES.

open up a large avenue for business. Queensland anthracite is, of course, particularly suitable for suction producers, and in this connection there is an immense business to be done in the Eastern States.

Last year the imports of electrical machinery and appliances were valued at £410,229, of which the British contribution was £195,631; the United States share

Electrical Machinery.

— Speed Curves of High-Speed Engines —



CURVES SHOWING LOWEST SPEEDS OF ENGINES WHICH WILL ENTITLE THEM TO FREE ADMISSION UNDER THE NEW AUSTRALIAN TARIFF AS "HIGH-SPEED STEAM ENGINES."

amounted to £117,898, that of Germany to £27,271, and Sweden £54,527. This is the state of things according to official figures, but as a matter of fact a substantial portion of the share returned as British represents foreign goods. The reasons for the success

of foreign firms are fairly obvious, and are not peculiar to this particular trade. They are that foreign firms are able to underquote ; they are better represented, and they are able to obtain lower freight rates. The whole subject is dealt with in another section of this Report, and need not be further referred to here.

Local
Industry.

There is a growing local industry in the manufacture of dynamos and motors, which the new tariff will encourage, machines up to 200 h.p. being supplied, and a factory was being started at the time of my visit to manufacture carbon filament incandescent lamps, a somewhat out-of-date enterprise in view of the introduction of the metallic filament lamp.

Motor and
Dynamo
Trade.

There is a great deal of business to be done in motors and dynamos and lighting plant generally in spite of the adverse conditions under which British manufacturers are labouring if they will improve their methods of dealing with the market and not trust so much to the merchant. This is peculiarly a business that needs a special representative with a technical as well as business training.

Numerous
Lighting
Schemes.

Numerous lighting schemes are in progress and under contemplation in the various States. The Electric Lighting Committee of Sydney are about to purchase a plant of the total value of about £83,000, for which the City Electrical Engineer has submitted the following estimate:—Two 4,000 kw. generators at £22,000, £44,000 ; one 400 kw. generator, £2,750 ; one 400 kw. transformer, £450 ; switchgear (at power-house), £2,480 ; crane, £850 ; boilers with superheaters and stokers, five at £2,600, £13,000 ; pipework, valves, feed pumps, economisers, tanks, &c., £7,230 ; coal and ash conveyer, £1,900 ; sub-station motor generators, three at £3,200, £9,600 ; sub-station switch-gear, £1,150. The town of Sunbury in Victoria is also about to purchase an electric lighting plant, and one is also about to be installed in Adelaide in connection with a refuse destructor.

Tramway
Work.

In tramway work there are also large openings for trade. I need not refer in detail to the immense scheme reported on recently by Mr. Charles H. Merz for the electrification of the Melbourne suburban railways, a

portion of which is about to be put in hand at an early date, as it has already been very fully discussed in the electrical press, but further particulars can be obtained by manufacturers at the offices of the Manufacturers' Association. The estimated cost of the conversion of the entire system is given as £2,227,050, and the first stage, which I am informed is shortly to be put in hand, is estimated at £801,830. Immense Scheme.

I might mention, however, that the Report deals with two main questions:—

I. Is the substitution of electric traction for steam traction on the Melbourne Suburban System financially justifiable? Melbourne Suburban Railways Electrification.

II. If so, how can electric working be best applied?

After referring to the special importance of the suburban business, the experience of other cities and the advantages offered by electric traction, both to the public and to the management, technical considerations are dealt with and financial results determined. The main conclusion is that on account of the great advantages to the public and the improvement in financial results to be expected from so doing, the application of electrical operation to the suburban railways is justified. The more important conclusions and recommendations are here given in order of convenience rather than in their actual sequence in the report itself.

(1) The total capital outlay for the conversion of the whole suburban system will be £2,227,050. It is recommended that a portion only of the system be converted at present (see No. 19). Capital Outlay.

(2) In considering these figures the expenditure necessary if steam traction be retained must also be taken into account. This expenditure on rolling stock only amounts to £408,358.

(3) The expenses per train mile with electric traction would be 11·0d. as against 18·9d. with steam. With the former, however, there would be a greater train mileage. Cost of Electric Working.

(4) The total operating expenses with electric traction for the whole suburban service would be £27,267 per annum less than with steam (see No. 9).

(5) The total annual expenditure for the whole service including 4 per cent. on the new capital outlay would be £44,791 more than with steam; against this must be put the additional revenue due to the improved service. Financial Result.

(6) The surplus, after paying interest on new capital for the complete scheme, would, with electric traction, be £40,251 greater than was obtained in 1906 with steam.

(7) If electric traction be adopted an improved schedule speed and frequency of service becomes possible, with the existing tracks and termini. Improved Service.

(8) An increase of 20 per cent. over the present schedule speed and an increase of 71 per cent. in the train mileage are financially justifiable and are covered by the expenses referred to above.

Rolling Stock.

(9) The adoption instead of locomotives of the "multiple-unit" system of train operation is recommended, giving this increase of 71 per cent. in the train mileage with an increase of only 23 per cent. in the ton mileage.

(10) Cross-compartment coaches should be adopted, the existing bogie stock being altered and used for the electric service.

(11) The total stock required would be 496 coaches with electric working, as compared with 546 coaches and 110 locomotives with steam, the reduction in the number of coaches being due to the higher schedule speed.

Electrical System.

(12) A direct current 800 volt system would be the cheapest and best system for this particular case.

(13) The direct current should be distributed to the trains from sub-stations by means of a protected conductor rail.

(14) The sub-stations should be supplied with 3-phase high tension current from the power station by means of underground cables in the central areas, and by overhead lines in the less populous districts.

Power Station.

(15) The energy required should be generated in a central power station situated at Yarraville designed to handle the load of 35,000 electrical horse-power.

(16) This power station should be designed to burn either black or brown coal, and the power plant consist of water tube boilers and steam turbines.

(17) The Spencer Street and Elsternwick Stations should be shut down, and the St. Kilda Tramway and the existing lighting system be supplied in bulk from Yarraville.

(18) The Yarraville Power Station should be also used for the lighting of the railway stations and the driving of the Newport and North Melbourne Workshops.

Initial Scheme.

(19) If electric traction be decided on, the scheme proceeded with in the first instance should consist of the Port Melbourne and St. Kilda and the Brighton and Essendon branches, involving, with power plant, an initial expenditure of £801,880.

(20) After paying interest on this sum the surplus from these lines would, with electric traction, be £21,358 greater than was obtained in 1906 with steam traction.

(21) If steam be retained upon these lines £141,019 will have to be spent on rolling stock for them alone.

(22) The conversion of these lines should be so arranged that the electric zone might be extended to the other suburban lines at a future date with a minimum of alteration and expense.

Melbourne's Cable Tramways.

Melbourne possesses quite a remarkable system of cable tramways and single deck cars are used. These tramways are extremely popular locally, and for the year ending June 30th, 1908, carried over sixty-five and a half million passengers, and the miles run numbered ten millions.

The owners, the Melbourne Tramway and Omnibus Co., have found the undertaking an extremely profitable one, the income for last year including £25,991 brought forward was £611,822. After meeting working expenses, and debenture interest, £45,000 was transferred to sinking fund, £35,000 to depreciation reserve,

£30,000 to return of capital, £7,314 to tramway renewals, and £72,000 to dividends paid. There remained a balance of £51,508, out of which a bonus of 6d. per share was paid, and a bonus was given of 10 per cent. on their salaries to the staff. This left £25,979 to carry forward. The traffic receipts showed an increase of £38,890, representing the carrying of five million more passengers. The working hours of employees have been reduced from 60 to 54 hours per week without lessening the pay.

At the end of about eight years the lease of the Company expires, and it is probable that the lines will then be electrified and form part of the electrification scheme of the Melbourne suburban railways referred to above.

The town of Geelong in Victoria is about to instal a tramway system, and tramways have also been decided on to connect the suburbs of Melbourne, Prahran and Malvern. A tramway system is also under consideration by the Launceston (Tasmania) Council. In Adelaide, as readers are doubtless aware, tenders have recently been invited for a very large quantity of tramway plant, and it is to be regretted that a large proportion of these orders have already gone to foreign firms.

Other Tram-
way Pro-
posals.

A considerable amount of tramway construction is in progress in New South Wales, where ten new lines or extensions are now in hand of a total length of 16 miles, involving an expenditure of £124,809. Estimates have been prepared in connection with forty-eight further proposals and a number of these have already been decided upon.

New Work
in N.S.W.

The following is a list of some of the works decided upon and projected :—

Works de-
cided upon.

Drummoyne to Hatton's Flat (Ryde), 3 miles
50 chains.

Wallsend to West Wallsend, 8 miles.

Willoughby Extension to Chatswood Railway
Station, 1 mile.

Booth Street, Annandale, 2nd Section, 52 chains.

Arncliffe Railway Station to Preddy's Road, 3 miles
40 chains.

Crown Street, via Baptist Street to Philip Street,
30 chains.

Miller Street to Blue's Point, 52 chains.

Miller Street to Crow's Nest, 68 chains.

Gore Hill to Burn's Bay Road, 1 mile 10 chains.
 Falcon Street to Suspension Bridge, 1 mile 10 chains.
 Henderson Road, 20 chains.
 Cleveland Street to Newton Road, 60 chains.
 Ocean Street to Waverley Car House, 13 chains.

Works projected.

Sutherland to Cronulla Beach.
 Dulwich Hill to Ashfield Railway Station.
 The Spit to Manly.

Electrical Schemes in Tasmania.

The table on the opposite page (kindly supplied to me by Mr. Hartwell Conder) gives particulars of some of the principal electrical installations in Tasmania.

It will be seen that most of the large work is going into foreign hands.

Electric Lifts.

There is a good business being done in Australia in electric lifts, but most of the trade is going to America and Germany. Over 60 were installed last year in Sydney alone.

Telephone Work.

The business to be done in telephones and switchboards is considerable, but American and Swedish firms have hitherto obtained the bulk of the orders. A more favourable condition of things, however, is likely to be established in the near future, for by negotiations with the Australian Government on behalf of the Manufacturers' Association I secured some substantial concessions in favour of British firms, which will enable them to tender with a better prospect of doing business, and I was able to arrange for the establishment in London of a sample room where specimen instruments and parts of switchboards, &c., may be inspected by manufacturers before quoting. This will enable them to ascertain exactly what they are quoting for and so to give closer prices. Manufacturers have hitherto been compelled to quote to American and Swedish standards, but the Australian Government has now decided to adopt English standards wherever possible.

NEW ZEALAND TRADE.

Imports,
1907.

The total importations of engineering materials, machinery and appliances into New Zealand in 1907 were £3,159,394 as compared with £2,923,622 in 1906.

ELECTRICAL INSTALLATIONS IN TASMANIA.

Nam	Locality.	Electrical H.P.	Date of Installation.	Nature and Purpose.	Maker's Name.
Pioneer Tin Mining Co. -	Pioneer, N.E. Tasmania.	400	1908	Hydro-electric threephase plant to provide power and light for three tin dredging plants.	Allgemeine Electricitäts Gesellschaft.
Mt. Lyall Mining and Railway Co.	Queenstown, W. Tasmania.	1,200	1905-1907	Threephase plant. Steam turbo-generators to provide power to mine and works.	Brown, Bovin & Co.
Mt. Bischof Tin Mining Co.	Waratah, N.W. Tasmania.	200	1908	Ilgner Winding Plant - -	Allgemeine Electricitäts Gesellschaft.
Briseis Tin Mining Co. -	Derby, N.E. Tasmania.	250	1907	Threephase plant. Hydro-electric power for battery, tramway, and general.	British Westinghouse Co.
New Golden Gate Mining Co.	Mathinna, N.E. Tasmania.	58	1903	Direct current plant. 2 Dynamos, 100 amp., 220 volts. Driven by Pelton wheels.	Parker, Wolverhampton.
Hobart Gas Co. - -	Hobart, S. Tasmania.	90	1904	Threephase plant, direct coupled to Bellis Morcom engine. To provide power for pump down shaft 1,600 feet.	Siemens Bros. & Co., London.
Devonport Town Board -	Devonport, N. Tasmania.	470	1900	Lighting plant almost entirely. 4 Altimotors at 2,000 volts.	3 Machines. Siemens Bros.
Zeehan Town Board -	Zeehan, W. Tasmania.	128	1903	Direct current. 2 Belliss Brush steam dynamos.	1 Machine. Brush E.E. Co.
Launceston City Council -	Launceston, N. Tasmania.	206	1906	Direct current. For lighting town of Zeehan.	Brush E.E. Co.
		1,600	1904	Threephase plant. Lighting and power throughout city.	146 h.p. Thomas Parker Dynamo. 60 h.p. Brush E.E. Co. Dynamo. Electricitäts Aktien Gesellschaft.

- Agricultural Machinery.** £112,898 worth of agricultural machinery and implements were imported into New Zealand last year, an amount somewhat less than the average of the preceding four years. According to New Zealand statistics the United Kingdom's share of this trade was worth £36,000, while the United States' contribution amounted to £46,000, and Canada's £17,000. In dairying machinery, according to the same authority, the United Kingdom contributed £5,000 worth out of a total of £49,000 worth, but there is an amount of £30,000 contributed by Victoria and New South Wales, which undoubtedly includes some British machinery, but principally Swiss and Swedish. The amount credited to Sweden direct is £6,000 and the United States £5,000.
- Local Industry.** There is a growing industry in New Zealand for the manufacture of agricultural and dairying machinery, and increased competition from this direction is bound to appear in the future.
- Gas and Oil Engines.** Last year the total imports were valued at £110,132, of which the United Kingdom is credited with £70,000 and the United States £30,000. There is a good opening in New Zealand for small paraffin portable engines for farm and dairy work and for self-contained sets for house lighting. There is a considerable market also for marine engines for motor boats and launches, which are becoming increasingly popular in the many magnificent harbours which New Zealand possesses. The bulk of this trade is at present in American hands.
- Engineering Materials.** Engineering materials, including bars, rods, pig, wrought, wire, were imported to the value of £1,224,605 in 1907, which was nearly £250,000 in excess of the previous year's purchases. According to the Dominion's statistics £82,000 came from the United States, £24,000 from Germany, and £6,000 from other foreign countries; but, as a matter of fact, the foreign competition is very much keener than these figures indicate.
- Rails.** In 1907 £156,000 worth of rails and railway bolts were imported. In view of the large railway construction programme which the Dominion Government have decided upon for the current year, this item should be largely increased for 1909.

MACHINERY AND METAL MANUFACTURES 165

About £250,000 worth of electrical machinery was imported during the same year. There is keen competition for this trade, a very large proportion of which is in American and German hands, though official statistics do not indicate it. Electrical Machinery.

In 1907 the following machinery was imported:— Miscellaneous Imports.
 Flour milling, £2,247; gas making, £28,803; mining, £37,000; portable and traction engines, £29,360; printing machinery, £58,000; refrigerating, £8,000; wood-working, £9,000; woollen milling, £10,000; and general railway plant, £73,000. I mention these figures in order to give an idea of the extent of trade in various lines.

The total value of telephone and telegraph instruments and material ordered during the year ending 31st March 1908 was £130,554, and it will be seen from the following list that practically all the important orders, with the exception of those for wire and cable, were for goods of foreign origin. This is much to be regretted, since in recent years English firms have made enormous progress in the manufacture of such goods. The Department, however, have had their hands tied to some extent as the business done has been largely in the nature of "repeats," but I am glad to be able to report that they will be able, and it is the intention of the Department, to place more orders in Great Britain than hitherto. Telephones and Telegraphs.

LIST OF MATERIAL AND INSTRUMENTS PURCHASED BY THE NEW ZEALAND GOVERNMENT FOR THE YEAR ENDING MARCH 1908.

Wire, Iron	-	-	W. F. Dennis & Co.	New Zealand's purchases.
„ Galvanized	-	-	W. F. Dennis & Co.	
„ Copper	-	-	Shropshire Iron Co.	
„ V.I.R., 1/18 & 1/20			Lawrence & Hansen, British Insulated and Helsby Cable Co., Ltd.	
„ S.C.C.	-	-	London Electric Wires Co.	
Cable, aerial	-	-	British Insulated & Helsby Co., and Western Electric Co.	
Soldering Fluid	-	-	Sir William Burnett.	
Bolts	-	-	Messrs. Harton & Co., and the Lanarkshire Bolts, &c., Ltd.	
Zincs, Daniell			Porous I.R.G.P. & Tel. Co.	
Pots, Lightning Guards,			Rheostats, Galvanometers, Condensers,	
Keys.				

Telephones	- -	British L. M. Ericcson Co., and Western Electric Co.
Salammoniac	- -	The Cardiff Alkali Co. and Open Orde.
Cords	- -	British L. M. Ericcson and Western Electric Co.
Bells, Extension	-	Western Electric Co.
Conduits, Fibre	- -	Key Engineering Co., Ltd.
Earth Plates	- -	T. Bolton & Son.
Sounders, Relays	- -	H. W. Sullivan.
Resonators	- -	Bunnell Tel. and Electrical Co., N.Y.
Switchboard Plates,		British Insulated and Helsby Cable Co., Ltd.
Wire, Rubber 1/20		
Sounders, Polarised		
Plugs.		
Cable, 102 to 300 pair		Western Electric Co.
Jumper Wire, Cords,		
Central Battery Switch-		
boards, M.C. Material,		
Cable Hangers, Jack		
Switches, Switchboard		
Plates.		
Wire, Copper	- -	F. Smith & Co., and Elliott's Metal Co.
Porous Pots	- -	Fuller & Son.
Insulators	- -	Bullers, Ltd., and Siemens Bros.
Cells, Leclanché	- -	Siemens Bros.
Cells, Gordon	- -	Gordon Battery Co., N.Y.
Switchboard Plates	- -	General Electric Co.
Draw Vices, Pliers,		Buck & Hickman.
Ratchets.		
Cable Submarine, Wire		Open.
G.P., Wire Copper,		
Salammoniac.		

Extent of
Foreign
Trade.

It may be safely said that foreign competition is severe in practically all branches of the engineering trade, and of the total of over three million pounds sterling, a conservative estimate of the proportion of foreign trade would be £850,000. There are no official figures that can be quoted with any real authority.

MINES AND MINING MACHINERY.

Splendid
Mining
Prospects.

I am one of those who believe that the mining industries of both Australia and New Zealand are yet in their infancy: not half of the territory has yet been prospected, and recently rich discoveries have been made, which only need capital to galvanise them into great producing industries. The Australasian mining market has, for various reasons, been in a somewhat depressed condition, during the past year or so: this has not been due to any signs of exhaustion of the mining fields,

HAINAULT,

KALGURLIE,

ASSOCIATED,

PERSEVERANCE,



NORTH BOULDER.

SOUTH KALGURLIE.

LAKE VIEW.



VIEW OF BOULDER FROM THE BROWN HILL GOLD MINE.

TWO VIEWS OF THE WONDERFUL "GOLDEN MILE," KALGURLIE, WESTERN AUSTRALIA.

(Photos by Greenham & Franks, Perth.)

but principally to falls in the market values of metals, somewhat exorbitant labour demands, and to inevitable re-action which follows a period of unscrupulous company promotion and reckless finance. Certainly in Western Australia some of the largest producers have shown a decrease in output in the past two years' working, but there is no need for any feeling of insecurity on this account. The Kalgoorlie fields are settling down to be a low-grade proposition, but there are immense reserves of ore available which will show good profits for many years to come. That very important section of mining in South Australia, Queensland, New South Wales, and Tasmania dealing with copper, silver, lead, and tin, has received a temporary set back through the recent decline in values which dislocated finance and production in this branch of industry. Many new enterprises have had to be momentarily abandoned. Already with a firmer market in these metals the industries are beginning to recover. It is an ill wind, however, as we all know, that benefits no one, and in this instance the slump in prices has had the effect of inducing mine owners and managers to look more closely to the possibility of reducing cost of production. More economical methods of working are being discovered, and there is throughout this branch of industry a movement in the direction of reform, in works, and administration. New installations of machinery have recently been installed and others are under consideration. British firms dealing with mining machinery and supplies will find that the market for their goods is none the worse for the recent decline in values.

Recent
Depression.

It is almost impossible, to judge from the statistical information available, what the foreign share is in the trade in mining machinery and supplies, but a good indication of the state of competition may be gleaned from the following lists of purchases during definite periods by some of the leading mines. From these lists the British manufacturer will be able to gain an idea of the amount and character of machinery and goods which our competitors are supplying, and appended to some of the lists are comments made by mine managers.

Foreign
Competition.

STATEMENT OF DIRECT PURCHASES FOR
THREE YEARS OF A LARGE MINING COMPANY IN
WESTERN AUSTRALIA.

FROM GREAT BRITAIN:—						£	s.	d.
Quicksilver	-	-	-	-	-	933	18	2
Electric Machinery	-	-	-	-	-	2,835	15	4
Steel Tapes	-	-	-	-	-	4	5	6
Carbon Brushes	-	-	-	-	-	27	12	0
Gates' Crusher Spares	-	-	-	-	-	286	6	1
Electric Generator Spares	-	-	-	-	-	70	15	9
Crucibles	-	-	-	-	-	470	1	7
Steel	-	-	-	-	-	240	12	1
Sodium Bromide	-	-	-	-	-	99	14	2
Cyanide	-	-	-	-	-	21,791	13	9
Filter Cloth	-	-	-	-	-	4,680	17	7
Assay Mabor	-	-	-	-	-	43	10	2
Litharge	-	-	-	-	-	81	11	9
Fuse	-	-	-	-	-	107	9	2
Battery Screen	-	-	-	-	-	27	2	7
Gas Apparatus	-	-	-	-	-	5	14	6
						<hr/> £31,707 0 2 <hr/>		

FROM UNITED STATES:—								
Gates' Crusher Spares	-	-	-	-	-	39	8	3
Furnace Spares	-	-	-	-	-	3,969	2	7
Griffin Mill Spares	-	-	-	-	-	11,038	15	5
Raw Hide Belt	-	-	-	-	-	715	1	5
Leather Belt	-	-	-	-	-	357	12	7
Mine Trucks	-	-	-	-	-	428	14	3
Heine Boiler Spares	-	-	-	-	-	2,968	14	9
Brass Tubes	-	-	-	-	-	76	15	7
Electric Machinery	-	-	-	-	-	660	2	2
Conveyor Belting	-	-	-	-	-	72	0	2
Lathe	-	-	-	-	-	26	6	9
Crucibles	-	-	-	-	-	1,889	15	0
Air Compressor	-	-	-	-	-	3,697	16	7
Tube Cleaners	-	-	-	-	-	38	7	0
Time Recording Clocks	-	-	-	-	-	68	3	9
Rubber Valves	-	-	-	-	-	17	4	2
Packing	-	-	-	-	-	397	2	0
Dake Engine	-	-	-	-	-	28	12	3
Oils	-	-	-	-	-	1,495	6	1
Engine Spares	-	-	-	-	-	54	8	9
Cupel Machine	-	-	-	-	-	7	13	10
Rubber Gaskets	-	-	-	-	-	22	6	3
Shovels	-	-	-	-	-	36	3	11
Baize	-	-	-	-	-	23	8	9
Filter Paper	-	-	-	-	-	16	17	10
						<hr/> £28,146 0 1 <hr/>		

The following are the mine manager's comments on the above lists :—

“With reference to the American imports we would draw your attention to the fact that over £18,000 out of the total of £28,146 is made up of Crusher furnace, Griffin Mill and Heine boiler spares, which could not be purchased elsewhere, as the machinery and boilers in question are of American manufacture. Further, to the above we would also point out that the balance of about £10,000 includes the amount of £3,697 for an Ingersoll-Sergeant Air Compressor, which was purchased as being the most efficient machine for the cost, and a further amount of £1,495 for a special grade of oil, used on our electric generator, which we have tried with unsatisfactory results to replace with other grades of oil.

Reasons for
Loss of
Trade.

“The balance of our supplies for the three years under review amount to about £150,000, and were purchased from local stocks, which we are safe in saying are mostly made up of British imports although we are unable to state the exact percentage without going thoroughly into figures, which would occupy more time than we can spare at present.”

This shows the danger of British firms losing initial orders. Our American competitors in respect of the above machinery have supplied no less than £18,000 worth of spares. The above mine manager's comments are not altogether correct, for the Griffin Mill and Heine boiler have been, for some time past, manufactured in Great Britain as well as in the United States, and in regard to the air compressor and special lubricating oil, I find from enquiries that both could have been satisfactorily purchased in this country. I am also inclined to question the statement that most of the supplies purchased locally, amounting to £150,000, were mostly of British origin : enquiries which I made pointed to their being largely of foreign origin.

Preference
for American
Goods.

The following is another list of three years' purchases, and in this instance local supplies are included,

which, while being classed as British, are to some extent of foreign origin :—

Class.	Value (c.i.f.).	Country of Origin.
	£ s. d.	
Explosives, including Dynamite, Fuse, and Detonators.	24,476 17 11	Germany
Oils, Paints, and Colours - - -	5,063 1 1	{ 75% American 25% British
Mining Tools and Steel - - -	1,665 6 6	{ 65% American 35% British
Bolts and Nuts - - - -	872 7 11	British
Galvanized Iron - - - -	1,237 13 4	"
Bar Iron and Steel, Sheet Iron and Steel.	2,084 10 4	"
Candles - - - - -	3,898 3 11	Colonial
Sawn Timber - - - - -	9,035 11 5	{ 70% American 30% Colonial
Bricks - - - - -	867 1 8	{ 80% British 20% Colonial
Fireclay - - - - -	240 11 1	British
Cement - - - - -	1,072 5 8	"
Implements and Tools - - -	1,665 7 10	{ 55% American 45% British
Wire Rope - - - - -	936 13 0	British
Hemp Rope - - - - -	286 17 5	"
Machinery, including Steam Engines, Boilers, Belting, Machinery Spares, &c.	23,196 1 3	"
Zinc Shavings - - - - -	563 15 11	"
Cyanide, Sodium and Potassium -	13,705 14 7	"
Sulphuric Acid - - - - -	395 12 1	"
Boneash - - - - -	177 18 6	"
Crucibles - - - - -	452 18 10	"
Battery Screening - - - - -	558 17 2	"
Pipes and Fittings - - - - -	4,943 3 4	"
Sundry Supplies - - - - -	4,204 18 1	"
Chemical and Assay Material -	1,074 5 5	"
Rails and Fastenings - - - -	3,420 15 7	"
Hardware - - - - -	527 7 0	"
Electrical Material - - - - -	1,039 4 3	{ 50% American 20% German 30% British
Milling Machinery and Spares -	3,414 15 0	British
Pumps, Rock Drills and Spares -	5,964 12 8	American
Quicksilver - - - - -	1,012 4 0	Unknown
Coke - - - - -	1,127 9 7	British
Nails, Screws, and Rivets - - -	354 18 6	"
	£119,537 0 10	

The mine manager's comments are as follows :—
 "The reason why, in many instances, foreign goods are supplanting British are that American tools are lighter, better finished, and handier to use than those of British manufacture."

Yet another mine has purchased machinery in three years as follows :—

- 1 Climax Rock Drill (British).
- 1 Holman Rock Drill (British).
- 14 Ingersoll-Sergeant and Sullivan Drills (American.)
- 1 Blake Vacuum Pump, size 6 in. × 12 in. × 6 in. (American).
- 1 Blake Duplex Pump, size 10 in. × 5 in. × 10 in. (American).
- 1 Knowles Mine Pump, 16 in. × 8 in. × 24 in. (American).
- 1 Cameron Pump, 10 in. × 5 in. × 13 in. (American).
- 12 Mining trucks from Orienstein & Koppel (German).

Another mine has supplied the following record :—

MACHINERY, &c.

	£	s.	d.
<i>British.</i> —Total imported for the three years, consisting principally of Boilers, Engines, Pumps, Lathes and Machines - -	16,740	14	6
<i>American.</i> — Comprising Belt Conveyors, Rockbreakers, Dynamos, Air Compressors, Rock-Drilling Machines and Pumps -	22,025	14	4
<i>German.</i> —Filter Presses, Grit Mills, Motors, Mining Trucks, and Automatic Weighing Machines - - - -	6,283	13	10

MINING SUPPLIES.

In many cases we are not certain of the countries of origin, but the following should give a rough estimate :—

—	British.	American.	German,
	£ s. d.		£ s. d.
Explosives and Fuse	19,258 17 0	—	13,581 0 0
Detonators - -	369 2 3	—	—
Iron, Bar and Plates -	1,349 19 11	—	—
Mining Steel - -	2,623 8 11	—	—
Coke - -	1,425 11 6	—	—
Pipes and Fittings -	5,559 11 2	—	—
Cyanide and Salts -	47,672 10 11	—	—
Filter Cloth - -	4,318 11 3	—	—
General Stores -	30,882 11 11	9,095 13 1	12,702 4 8
Kerosene and Oils -	—	5,620 18 10	247 2 3
Cement - -	—	—	4,136 3 6
Total - -	113,460 4 10	14,716 11 11	30,666 10 5

The general manager of the above mine comments as follows :—“ In many cases the reason that machinery, &c., is imported from foreign countries is that they can supply a more up-to-date and suitable article ; some of the lines are not manufactured in Britain, other lines can be bought at a cheaper rate

Reasons for
Trade going
Abroad.

than British goods : and in some cases the foreign companies are better represented and advertised than is the case with British firms."

Finally, I give a more detailed list, which is particularly interesting in that it not only shows what severe competition exists for mining machinery and supplies between British, American, and German firms, but indicates the class of machinery and goods which Australian industries are producing for mining purposes.

Particulars.	Quantity.	Value.	Country of Origin.
Piping, Blk. Gas - - -	33,747 ft.	—	English.
" Steam - - -	3,682 "	—	"
" Steel - - -	309 "	—	"
Cement - - -	468 casks	—	German.
Detonators - - -	9½ cases	—	English.
" " " - - -	2 "	—	German.
Explosives, Gel. Dynamite	2,306 "	—	"
" " " - - -	352 "	—	British.
" Gelignite - - -	253 "	—	"
" " " - - -	132 "	—	German.
" Blasting Gelatine	212 "	—	"
" " " - - -	86 "	—	British.
" " Powder	35 kegs	—	German.
" Fuse - - -	63 casks	—	British.
" " - - -	3 "	—	Colonial.
Bolts - - -	226 cwt.	—	—
Bolt Ends - - -	53½ "	—	—
Clouts - - -	144 "	—	—
Bricks - - -	1,950	—	Local.
" " - - -	20½	—	British.
Nails, Wire - - -	116 cwt.	—	—
" S.H. - - -	24 cases	—	Colonial.
Screws - - -	275 gross	—	—
Washers - - -	8¼ cwt.	—	—
Rivets - - -	44½ "	—	Colonial.
Ridging - - -	101 lengths	—	—
Down Pipe - - -	62 "	—	—
Gutter - - -	62 "	—	—
Galvanised Corr. Iron	86 cases.	—	British.
Plain Galvanised Iron	17½ "	—	—
Doors - - -	7 "	—	Colonial.
Sashes - - -	77 pairs.	—	—
Jarrah - - -	258,375 sup. ft.	—	Local.
American - - -	53,590 "	—	American.
T. & G. Deal - - -	26,352 "	—	—
Rolled Joists - - -	74 cwt.	—	—
Ropes, Steel - - -	153½ "	—	English.
" Manila - - -	55½ "	—	Colonial.
Steel, Mild - - -	84 tons cwt. qrs. lbs.	—	—
" Cast - - -	47 3 3 0	—	—
" Drill - - -	284 0 0 0	—	—
" Plates - - -	54 0 0 0	—	—
Iron, Bar - - -	42 6 2 0	—	—
Oils - - -	10,857 galls.	—	—
Kerosene - - -	432 cases.	—	American.

MACHINERY AND METAL MANUFACTURES. 173

Particulars.	Quantity.	Value.	Country of Origin.
	tons cwt. qrs.	£ s. d.	
Coal - - - -	324 0 3	—	Colonial.
Coke - - - -	153 9 3	—	British.
Tram Rails - - -	48 15 1	—	—
Sodium Cyanide - -	236 cases.	—	British.
Potassium " - -	1,298 "	—	"
Rock Drill Spares - -	—	1,661 15 9	American.
Filterpress " - -	—	115 6 7	—
Grinding Pan Spares -	—	189 18 1	Colonial.
Rockbreaker " - -	—	229 13 11	American.
Aërial Tram " - -	—	304 7 0	English.
Roaster " - -	—	45 0 0	Colonial.
Ball Mill " - -	—	203 19 2	German.
Ball Mills, Krupp - -	—	787 1 2	Colonial.
Grinding Pans - -	—	696 6 3	German.
Rock Drills, Holman -	—	2,473 4 11	English.
" U. E. Sullivan -	—	1,240 0 0	German.
" Ingersoll-Ser-geant.	—	1,322 10 0	Colonial.
Meters - - - -	—	63 17 6	English.
Rockbreakers, Blake's -	—	99 0 0	American.
" Gates' - - -	—	555 11 1	"
Filterpresses, Martin's -	—	133 9 0	English.
" Clarifying - -	—	568 0 0	"
Retorts - - - -	—	348 0 0	American.
Screw Conveyor - -	—	2,085 0 0	Colonial.
Boilers - - - -	—	107 4 0	German.
Feed Water Heater -	—	60 18 0	Colonial.
Dust Shoots - - -	—	173 8 8	German.
Launders - - - -	—	2,376 10 0	English.
Shafting - - - -	—	47 10 0	—
Pumps - - - -	—	30 0 0	Colonial.
General Stores for 3 years in addition to above.	—	150 0 0	"
Firewood and Mine Timber	—	133 0 0	English.
Water - - - -	—	1,765 0 0	—
Electric Motors - -	—	46,748 6 11	—
Galvanised Iron Tanks -	—	38,623 17 0	Local.
Pneumatic Drills - -	—	9,318 11 7	"
Air Compressor Additions	—	188 10 0	German.
Lathes - - - -	—	236 13 3	Colonial.
Wheeler Condensers - -	—	28 10 0	American.
Agitation Vats - -	—	390 0 0	Colonial.
Berdan Pan - - -	—	150 0 0	English.
Smoke Stacks - - -	—	553 2 4	American.
Blowers - - - -	—	760 12 3	Colonial.
Grease Extractors - -	—	35 0 0	"
Settling Tanks - -	—	491 0 0	"
Ball Mill Framing - -	—	15 10 0	American.
Sump Tanks - - -	—	175 13 8	Colonial.
		455 0 0	"
		365 0 0	English.
		80 0 0	Colonial.
Included in the amount of General Stores are the following:—			
Belting - - - -	—	1,247 16 0	British.
Candles - - - -	—	1,447 0 10	Colonial.
Filtercloth - - -	—	1,117 7 0	British.
Insertion - - - -	—	157 11 2	"
India-Rubber Goods -	—	159 14 0	"
Castings - - - -	—	2,327 13 11	Colonial.
Pipe Fittings - - -	—	694 12 1	British.

Local
Industries.

Australia is very strong in the manufacture of mining and smelting machinery, and is exporting to New Zealand, Straits Settlements, and other local markets, an increasing quantity every year. There is no doubt that local manufacturers can make slow-speed steam engines, air compressors, rock drills, and tools of various kinds, and general mining plant suitable for Australian conditions that will compare favourably with the productions of other countries. The State of Victoria exported £53,000 worth, South Australia £30,000, and New South Wales £5,000 worth in 1906, besides catering largely for local requirements.

Influences
against
British
Trade.

The British manufacturer has several distinct adverse influences to fight in the struggle for trade in this market. As in the case of the Rand in South Africa, the American mine manager and engineer is very much in evidence, although the tendency is to replace him with locally trained men, and men from our own country. The American naturally favours the machinery to which he has been accustomed in his own country, and which he has successfully operated there. Then the American and German manufacturers are able to obtain lower freight rates, which is a very important factor in this heavy class of goods.

Immense
Field.

Nevertheless there is an immense field for British enterprise at the present time, and what our manufacturers must bear in mind is, that the potentiality of Australia and New Zealand as a market for mining machinery is very great. I do not doubt that in another twenty years' time the market will be able to absorb four times the quantity of machinery and supplies that it does at the present time.

HYDRO-ELECTRIC SCHEMES.

Water
Power in
Australia.

There is comparatively little natural water power available throughout the Commonwealth, but there are a few important schemes under consideration. In the section dealing with irrigation reference is made to the Trawool scheme, where it is proposed to use the whole of the water stored in the immense reservoir for generating electricity for distribution in Melbourne



A VIEW OF THE FAMOUS BROKEN HILL PROPRIETARY MINE, N.S.W.



HYDRAULIC GOLD MINING IN NEW ZEALAND.

and the mining districts of Ballarat and Bendigo. There is a scheme also being discussed in New South Wales.

The greatest development in this connection, however, will possibly take place in Tasmania. The Launceston Corporation has shown the way by harnessing a small flow and supplying throughout the city electric current to large consumers at a flat rate of $\frac{1}{2}$ d. per unit, while for special contracts a discretionary charge of from £5 to £15 per h.p. per annum is in vogue. Some of the mines on the west coast also utilise water power available locally. It has been estimated that some 80,000 h.p. is available at the outlets of Lake St. Clair, Lake Echo and the Great Lake in the interior of the island, and a scheme is now being discussed for harnessing those waters and utilising the power for manufacturing purposes in Hobart and for operating a new railway linking Hobart and the west coast.

Schemes
for Tas-
mania.

In New Zealand there are numerous openings for establishing water-power schemes; waterfalls are abundant in both the north and south islands, and engineers and capitalists interested cannot do better than refer to the excellent reports on the subject compiled by Mr. P. S. Hay, M.Inst.C.E., and Mr. L. M. Hancock, an American expert, copies of which can be seen at the offices of the Manufacturers' Association.

Possibilities
in New
Zealand.

One of the most interesting schemes in Australasia is the Waipori (New Zealand) hydro-electric power transmission scheme, from which power is obtained to operate the tramway system of Dunedin, and for lighting and general power purposes in that city. This plant was originally started by a private company, but before the work had proceeded very far was acquired for, and completed by, the Dunedin Corporation. While the plant, through change in plans and proprietorship in its early stages of construction, cannot be described as an ideal one, it has many interesting features, and I therefore propose to give some details of the power station as supplied to me by the consulting engineer, Mr. W. G. T. Goodman, M.Inst.C.E., now consulting engineer to the Adelaide Tramways Trust.

The Waipori
Hydro-Elec-
tric Works.

The Power
Station.

The power station is divided into two portions : the front portion forms the engine-room and is 100 ft. long by 30 ft. wide ; the back portion is 100 ft. long by 29 ft. wide, and has two floors. The main walls of the engine-room carry a 15-ton Krupp travelling crane, which runs the whole length of the building on concrete girders, which are reinforced with steel rods and partly supported on concrete corbels. There are two main generating units, each unit consisting of one General Electric 1,000 K.W. 2,400 volt 50 cycle three-phase generator, revolving field type with 14 poles, running at 429 r.p.m. The regulation at full load and 100 per cent. P.F. is 7 per cent., and with 1,000 K.V.A. and 75 per cent. P.F. 15 per cent. The efficiency is 95.25 per cent. at full load. The generator is driven by two pelton wheels, each 4 ft. 6 in. diameter, one at each end of the shaft, and on each pelton wheel there are 15 buckets and the wheels are out-hung. Leading to each water wheel is the 14-in. pipe, so designed as to increase the velocity at the nozzles. The flow of water is controlled by the main 14-in. gate valves on each branch, which, under operating conditions, are left wide open, and the regulation is adjusted by means of moveable needles within the nozzles. The needles (here illustrated) are of bronze and operated by worm gear and hand wheels, so that the quantity of water flowing through the nozzles varies according to the area of the concentric aperture between needle and nozzle tip, which is $5\frac{1}{2}$ in. internal diameter. When operating at full load the radial space is $\frac{7}{8}$ in. The needles are provided with heavy reaction springs to ease the effort required to increase the annular opening.

The Pelton
Wheels.

Under full load conditions the nozzles are at the top position and the jet impinges on the centre of the buckets. At no load the jet is quite clear of the buckets and impinges against a heavy iron baffle plate which deflects the water into the bottom of the tail race. The jets discharge right across the river and strike the opposite bank. They act as an ejector and special inducts are led into the water educts to admit air. The whole of the solid casting forming the nozzles is attached to the main pipe by a ball and socket joint,

and is free to move in a vertical plane through an angle of four degrees. The nozzles are raised and deflected by means of a system of levers, cut gearing, and rack shaft operated by the hydraulic governors, which are Lombard type "E." The deflecting portion of the nozzles is counterbalanced by hydraulic pressure, so that quick action can be secured from the governor on account of the absence of inertia in heavy counter-balanced weights.

The governors are provided with electrical control motors operated from the table switchboard, which admit of instantaneous control of the speed of the water wheels. This control is of great advantage when synchronising. The regulation of the governors is exceedingly sensitive and does not vary more than four per cent. from no load to full load and from full load to no load. When the load is thrown off the jets are deflected clear of the buckets. The Governors.

The pelton wheels are capable of driving the generators at 50 per cent. overload, but they are designed to give the best efficiency at full load. The buckets are made of the highest grade cast semi-steel, and the wheels are guaranteed to safely withstand the highest runaway speed attainable under the effective head of 665 feet without damage with the nozzle adjusted to give the maximum stream. The nozzles are pivoted on heavy trunnion pins and the ball joints are leather packed with oak-tanned leather laid in tallow. The pelton wheels are guaranteed to develop an efficiency of 80 per cent. of the theoretical energy in the water delivered to each wheel at full rated load, 75 per cent. at three-quarter load, and 70 per cent. at half load. In the tests made the efficiency obtained at full load was 83 per cent. At the down stream end of the engine-room are located two exciter units, foundations being provided for a third. Each unit consists of a G.E. 40 K.W. 6 pole D.C. 125 volt, 725 r.p.m. generator coupled to a 60 h.p. pelton wheel; coupled at the other end of the pelton wheel is a 60 h.p. induction motor, the object of the latter being to act as a speed regulator for the exciter, the position of the

adjustable needles in the deflecting nozzles being fixed to take care of the normal load on the exciters.

Transformer
Room.

In the transformer room there are 7 G.E.C. transformers, each having a rated capacity of 350 K.W. and arranged in two banks of three each, with the seventh as a spare. The transformer ratio is 2,400 to 20,000, and they are connected in "Delta" on the L.T. side and in "Star" on the H.T. side, with neutral earthed giving a potential of 34,700 volts between phases. The primary full load current is 146 ampères, and the secondary full load current 17.5 ampères. The transformers are oil insulated, water cooled, and each tank contains 350 gallons of oil. They are guaranteed not to exceed a temperature rise of 35 degrees C. after twenty-four hours' run at full load and 50 degrees C. after two hours' run at 25 per cent. overload, and the tests prove that these guarantees were fully conservative. The efficiency of the transformers at full load is 97 per cent., the regulation with non-inductive load 1.4 per cent., and at 90 per cent. P.F. 2.8 per cent. There are several small transformers in the power station for various purposes. Three 40 K.W. transformers for motors and lighting, the potential being regulated by taps connecting to the dial switches on switchboard, and series transformers in transmission lines for operating the overload relays and line ammeters.

The Voltage.

The voltage, of course, depended upon the length of transmission, the price of copper and the limit of line loss. The question of good regulation practically governed the latter, and after careful consideration a voltage of 35,000 was adopted as being reasonable for insulation and economical as regards weight of copper in the line. The total distance along the transmission route from power station to sub-station No. 1 is 27 miles 8 chains, and from the sub-station to the converter station, in the centre of Dunedin, two miles, the total length of transmission being, therefore, 29 miles 8 chains. The transmission line is in duplicate throughout, and the lines entirely independent of each other.

It would occupy too much space to deal with the converter and sub-station work along the transmission

MACHINERY AND METAL MANUFACTURES. 179

line, switchboards and other details. The cost of the various works described herein may be of interest, and are given below :—

	£	s.	d.	£	s.	d.
Hydraulic Portion :—						
Purchase of Rights - - -	12,500	0	0			
Dam - - - - -	540	11	0			
Flume - - - - -	6,694	5	7			
Bench and Tunnels - - -	5,898	5	11			
Pipe Line - - - - -	6,132	14	3			
Governor Water Supply - -	828	12	0			
Roads, Tramways, Bridges, Saw-mills, etc.	3,397	7	10			
Engineering - - - - -	5,730	13	8			
Law Costs, Office Expenses, Interest, Taxes, etc.	11,378	13	1			
				53,301	3	4
Electrical Portion :—						
Power Station Building and Foundations.	8,520	0	0			
Power Station Plant, etc. - -	20,815	0	0			
				29,335	0	0
H.T. Transmission Line - - -				19,312	5	1
No. 1 Sub-station - - - - -				6,862	10	7
L.T. Transmission Line - - -				7,263	13	6
Converter Station - - - - -				18,834	1	1
Residences at Waipori - - -				2,154	18	6
Underground Reticulation - -				10,069	3	6
Overhead Reticulation - - -				2,505	15	10
				£149,638	11	5

The total value of electrical plant used in the installation is £24,251 of which £8,373 is General Electric Co. of America, and £15,878 Westinghouse Co. It is to be regretted that the larger orders involved in this plant should have been placed almost entirely with foreign firms. It should be mentioned, however, that the cables used are chiefly British.

The Dunedin City Council have decided to carry out an enlargement of this scheme that will provide an additional 2,000 K.W. The estimated cost is £20,900, and manufacturers of electrical and other machinery will do well to place themselves, through their agents, in touch with the city electrical engineer.

Hardware and Ironmongery.

Successful Competition. IN no field of trade has the foreigner been more persistent and successful than in the one which is covered by the above heading, and the chief reason for this is, that he is able to quote, as a rule, lower prices for his goods. The kinds of goods usually stocked by hardware houses are those which are generally manufactured in large quantities at a time, involving much repetition of work; and, for reasons given in a previous section of this Report, our competitors are more advantageously situated to produce many of these lines and are consequently in a position to supply their goods at lower prices. There is another reason for their success, and it is that they seem to understand more thoroughly the matter of packing and labelling goods. This question is also more fully dealt with in a previous section (*see* page 61).

Preference for English Goods. English goods are nearly always preferred by reason of their generally higher quality and strength, but their finish is not so attractive to the Australian buyer, while the American satisfies local requirements and conditions more completely than our own manufacturers do.

Modern Methods of Competitors. During my visit there were travelling through the country a representative of a United States file-manufacturing firm, and another of a saw-making house. Both these men were not men merely with a commercial training, but familiar with every process in the manufacture of the goods they were selling. They not only called on the principal buyers and the largest users, but gave lectures before engineering societies and workmen's clubs, and practically demonstrated the qualities and characteristics of their goods. I was personally able to judge of a lecture on files given in Melbourne, and it certainly was extremely interesting and calculated to create an impression in favour of American methods and productions as compared with those of Great Britain. I have no doubt whatever that some of the apparent "want of enterprise" of

British firms is a reflection of the condition of trade in our home market. In Great Britain to-day one sees year after year an increasing quantity of German and American small tools on the market, and it is possible that this struggle for existence which the trade is undergoing at home has hampered our manufacturers in pushing their business in the Colonies.

Effects of
Home Com-
petition.

Whatever the cause, the fact remains that the British manufacturer will have to exercise more enterprise if he would regain the place he has lost in the tool trade of Australia and New Zealand. He will also have to put himself into a position to give prompter deliveries. I heard a number of complaints on this score, but probably the reason is the same as that which I have just given. While the American is able to manufacture these goods in large quantities, having a huge home market to depend upon, the British manufacturer can do little more than make to order.

More Enter-
prise essen-
tial.

Up to about eight years ago practically the whole of this trade was done with British manufacturers, but here the superiority of American methods in placing goods on the market is shown. Two American firms in particular sent to Australia special representatives with complete samples of lock sets in entirely new finishes, such as antique copper, oxidised silver, &c. They also brought out a 3½-inch mortice lock which can be placed on the style of the door slightly higher than where the lock was usually placed on the lock rail. The samples brought out were all fitted up and shown in action. The method adopted by these special representatives was not so much to go to the importers of locks, but to demonstrate them to architects and builders, and thus create a demand. They then came to the importers and practically forced their hand in ordering the goods. Since that time, in cheap and medium-priced lock sets they have practically held the market. The British manufacturers have, during the last two years, followed their footsteps in the new style of finishes and locks and are regaining some of the trade.

Lock Sets.

American
Enterprise.

Stoves.

These are chiefly of Colonial manufacture, although there are still some British and American imported. The Scotch ones are the chief of these. A large importing house avers that "in this class of stove the Americans make a much finer casting and better finished article." Either due to bad packing or irresponsible handling by shipping companies, there is always a larger percentage of breakages in consignments of stoves from Great Britain than from America, and this militates against British trade.

Lawn
Mowers.

Up to five or six years ago the chief high-priced lawn mowers were imported from Great Britain, also many of the lower priced, although for a long time the Americans have had a good hold of the market for low-priced mowers. During the last few years, higher-priced American mowers have come on to the market, and are now to a very large extent superseding the British. Discussing this question of competition a Melbourne house says, "It is not, in this case, a question of quality or finish, but simply a matter of pushing the goods. The Americans have several representatives in Australia, who know their business, but the British manufacturers, such as —, are practically not represented."

Guns and
Cartridges.

These are practically divided between two British manufacturers and two American manufacturers. According to an importing house, "In this case, the Americans have got their goods on to the market simply by sheer push. When the British held the market completely the Americans sent out special representatives, who, by their methods of doing business, and the attractive way in which their goods were got up, obtained orders, and gradually increased their trade."

Imports.

In 1906 the United States contributed £76,212 worth out of a total of £146,647 of the trade in sporting cartridges. Similarly in sporting rifles and shot guns the United States predominates with a total value of £34,241 out of a total of £63,049, the United Kingdom's trade being £20,733, Germany's £7,509, and Belgium's £5,080. The American trade is chiefly in rifles and the cheaper class of shot guns, while the

British trade is in the better class of guns. These figures refer only to Australian trade.

The bulk of this trade at present is in American Small Tools. hands, and German tools are also growing in favour. In 1907 the total importations of these goods into Australia amounted to no less than £478,123, of which £228,276 were of American origin, £219,907 of British origin, £22,395 from Germany, £4,000 from Canada, and £2,000 from France, and the balance from other foreign countries.

New Zealand in 1907 imported "Artificers' tools" to the value of £120,418, and foreign competition is much the same there as in Australia.

United States manufacturers are rapidly gaining the Augers. trade in this line. For a time British goods held the market, but owing to uncertainties in delivery the trade is going out of their hands.

As has been the case for some years, the Americans Axes. hold the market almost entirely. The trade in axes is a fairly large one, and American firms supply patterns that are better liked by Australian and New Zealand woodcutters than are British. In addition to showing special patterns of their own they have made special ones for the Australian trade. I found that British manufacturers have in several instances been approached to make these patterns, but have invariably refused.

Though the English article is said to be a better Anvils. one, the American manufacturers are taking the trade by supplying a more highly finished anvil at a lower price. Cheap freights from America is said to be the principal reason for the lower price.

These are chiefly supplied by British firms, whose Adzes, Picks, goods are preferred to any foreign make. Braces, and Chisels.

For some time past British firms have been suc- Drills. cessful in doing a large proportion of the trade in twist drills, but latterly American drills have again been largely imported.

Two American firms hold the bulk of the Austro- Files. lian trade in files. There is no doubt that British files are the better of the two, but they are not sold at prices to compete with the machine-cut American files.

Conditions under which tradesmen work in Australia are such that they do not need the heavy file which can be re-cut from time to time; they prefer a cheap one that may be thrown away when worn. American representatives also work the market direct.

Iron Planes. Iron planes are imported almost exclusively from America. The reason of this is that the American manufacturer is continually producing something new. The ones imported are stated to be of good quality.

Carpenters' Hammers. Whilst both the American and British are imported, the American is more in favour as they produce lower-priced goods.

Saws. These are very largely imported from America, and although, in many instances, British and Americans make the same patterns, the artisans in Australia seem to prefer the American, as they say it is much easier to sharpen than the British; in fact, a common complaint against the British saw is that it is too hard, and that, when being sharpened by a carpenter and set, the teeth very often break. According to an importing house, "British manufacturers like — and — are now making and showing saws through their representatives, which should compete in every way with the American."

Spades and Forks. The trade in these is fairly divided between America and Great Britain, the higher-priced coming from Great Britain, the lower from America. In such lines as hay forks and long-handled mining shovels the Americans hold the market, as they make a much better article at the price than the British.

Galvanized Iron Sheets. Though British firms control the bulk of the trade in this line, the Americans have been able to work into the Australian trade through being able to sell at lower prices. This is said to be largely due to the lower rates of freight prevailing from America as compared with those from England. In New Zealand I found a firm in Wellington who were doing considerable business in German corrugated galvanized sheets upon which were stamped the name of their London house. One of their customers had purchased these sheets under the impression that they were of English manufacture.

In the matter of cutlery Germany is making considerable headway in Australia. Last year she exported goods to the value of over £23,000, while America's sales were over £10,000. The bulk of the business continues to remain, as heretofore, in British hands; the imports from Great Britain being £131,824 in 1907. Certain British makers could do a much larger business if they could give prompter deliveries. New Zealand in 1907 imported cutlery to the value of £27,607.

The larger portion of the trade in horse-shoe nails is of foreign origin. Of a total importation of the value of £12,070 in 1907, Great Britain contributed £3,129. Germany's share was £2,375, United States £1,480, Belgium £79, other foreign countries £5,007. The trade in other nails of various kinds totalled £73,294, of which the British share was £35,207, the United States sold to the value of £21,420, and Germany £15,677. New Zealand purchased nails in 1907 to the value of £60,166, and I found the condition of foreign competition there in much the same state as in Australia.

Germany is rapidly forging ahead in this business. Her exports to Australia last year amounted to no less than £173,645 of a total of £581,681. The bulk is sent from Great Britain, but German manufacturers are fighting severely for the trade.

The same may be said in regard to barbed iron and steel and other wire. Here the business is rapidly being taken out of the hands of British manufacturers altogether. Of the total importations of £728,405 in 1907, Germany contributed no less than £371,599, the United States £187,412, while the British share amounted to only £157,146. The reason for this is the same one that I have given so often, viz., that the foreign manufacturer can under-sell. This is due not only to his having a protected home market, but an important factor is that he can get his goods to market for a much lower freight rate than the Britisher is compelled to pay.

A similar story can be told in regard to sewing machines. Of a total importation in 1907 of £189,364, Great Britain contributed £12,789, while the United States' share was £132,578, and Germany's £43,798.

Lamps and
Lampware.

This, again, is a trade that is rapidly falling into German and American hands. Of a total purchase by Australia of £151,000 worth in 1907, the British share was only £60,755. Here, again, the difference in shipping rates tell against the British article. The Americans and Germans pack their lamps and lamp glasses in separate boxes, whereas the Britisher has to be satisfied to wrap his goods in paper only, as the separate cardboard-box method of packing bulks his consignment too much, and the sea carriage on these goods is charged by measurement.

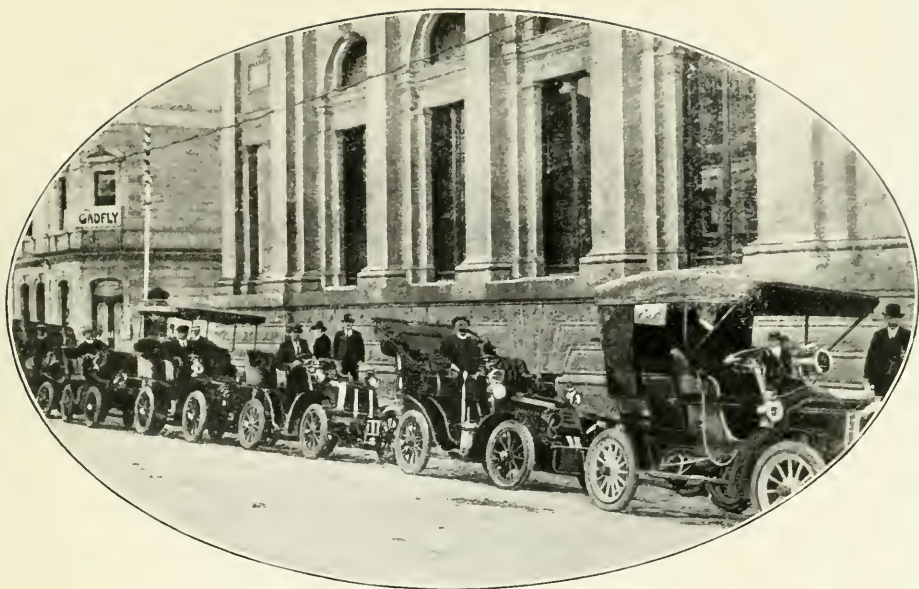
Motor Vehicles.

Scope of the
Market.

I WAS very much impressed with the scope that existed throughout Australia and New Zealand for the sale of motor vehicles of all kinds, from the smallest single-cylinder to the high-powered six, and from the lightest delivery van to the heaviest lorry. I made careful enquiries into the condition of the market, and am bound to say that this is one line of trade which seems to have been very much neglected by the British manufacturer. If one eliminated the exports of two or three British firms, the market would be found to be practically in the hands of German, French and American houses, while one finds Italian and Belgian cars in distinct evidence.

Foreign
Enterprise.

While in Western Australia the Government kindly placed at my disposal the "official" car, and when sent round to my hotel on the first occasion I noticed with regret that it was of foreign production; but I must admit that under the very severe work which I gave it, over rough roads, little better than cattle tracks, it behaved extremely well. When I got to South Australia the Government also generously placed at my disposal a car, but again it was of French production, while in another city a Manufacturers' Association placed at my disposal a car of German make, and in yet another city a car of French build. On the other hand, I made many pleasant journeys in



A MOTOR CAR STAND IN ADELAIDE, SOUTH AUSTRALIA.



THE MOTOR BOAT IN THE AUSTRALIAN PEARL FISHING INDUSTRY.

THE INDUSTRIAL MOTOR IN AUSTRALIA.

Australia on a Talbot and a Star, while in New Zealand I was delighted with the behaviour of a 30 h.p. Daimler, which on one occasion took me to the summit of Mount Eden, overlooking Auckland, on top gear.

Before discussing any details relating to the trade it would, perhaps, be well to refer to the general conditions obtaining in Australasia. Throughout Australia the climate, as readers will know, is usually dry and for a few months in each year it may be extremely hot. The soil is, generally speaking, of a sandy character, and the roads are nearly always covered with a thick layer of dust. Within twenty miles of the large towns, such as Adelaide, Perth, Fremantle, Ballarat, Bendigo, Melbourne, Sydney, Newcastle and Brisbane, the roads are made up, and will stand a speed of twenty-five miles an hour without absolute discomfort, while the old coach roads, between Adelaide and Melbourne, and Melbourne and Sydney, are fairly good, though liable at times to be rough in places. As, however, is known in all countries where distances are so long between centres of population, and where the population itself is so small, roads are usually rough; indeed, many of them are nothing more than cattle tracks: but, owing to the dryness and peculiar character of the soil, it is often possible to take a car very long distances through the bush away from roads altogether. I have known cars taken by squatters from Perth across country, right up to the Northern Territory; and to realise what is possible in Australia that probably could not be attempted in any other country, one has only to remember the recent wonderful feat of the motorist who followed the telegraph lines right across the continent, from Adelaide to Port Darwin. This demonstrates what can be done in a motor car in Australia, even in the entire absence of roads, and this will undoubtedly do much to forward the automobile movement, which has already become popular throughout Australasia.

General
Motoring
Conditions.

In Australia.

In New
Zealand.

The conditions are very different in New Zealand. Here, in both the North and South Islands the climate very much resembles that of our own country, with

heavy rainfall, and a soil more like our own, and which in the absence of good roads gets into a muddy and boggy condition during the wet season. There is an excellent road, however, between Christchurch through Omaru and Timaru to Dunedin, and there are more cars in this part of New Zealand—an extremely flat country—than in all the other parts put together.

An Ideal
Colonial
Car.

These conditions, as manufacturers will readily see, call for some special features in design, especially as there are very few bridges, and streams have consequently to be forded. At the risk of repeating a good deal that might already be known to car builders, I think it might be well to go through the principal features of a car suitable for ordinary touring use in either Australia or New Zealand.

Track.

The most suitable track I would suggest is 4 ft. 10 in.

Clearance.

Owing to the deep ruts and soft sand that one continually encounters, the lowest point on every car should be 11 ins. from the ground.

Wheel-base.

The most suitable wheel-base for cars of 20 h.p. and over is 9 ft. 6 ins. to 10 ft. 6 ins.

Carburettor
and Com-
mutator.

Owing to the necessity of occasionally having to ford streams, these should be kept as high as possible, and at least 3 ft. from the ground. Carburettors with a separate air control are preferred, as automatic carburettors adjusted in this country do not work satisfactorily and economically in a hot climate without expert readjustment locally, which cannot always be secured. There is no necessity to heat the air supply, either from the exhaust branch or by water-jacketing. Fuel economy is an important consideration, for although in the large towns petrol can be obtained at prices very close to those prevailing at home, the charges increase rapidly the further inland it is purchased, owing to the high cost of transportation.

Lock.

A good lock is absolutely essential as cars very often have to turn in narrow places to get out of awkward positions.

Fuel Supply.

Very steep hills are encountered and often exceptionally steep gradients entering and leaving river beds

and ravines, and consequently it is always preferable to (and owing to the high position of the carburettor often necessary) to feed fuel under pressure.

Crank chambers should be well partitioned to prevent oil flooding the crank chamber in ascending or descending steep gradients. Lubricating.

Most of the cars that I saw in Australia and New Zealand were much undertyred. Heavy tyres are absolutely essential on roads such as are made there, for while the wear on the tread is not excessive, the bursting strains are very severe. 880 by 120 are suitable for a car of one ton, and larger sizes for heavier cars. Tyres.

All cars need to be very well sprung. No part is more severely tested on Australian roads, where one often comes across patches of soft sand which have to be taken at a rush, and where the car leaves the hard for the soft parts and up again the other side, the jolting and strains are often severe, and also in fording water courses. The springs on the average British car do not allow of sufficient wheel play, and in very many cases mud-guards are fitted too close to the wheels, and have to be altered at considerable trouble and expense to the importer. A transverse rear spring is said to act better with the deep ruts and sand holes met with on Australian roads. Springs.

Ample cooling capacity is a necessity, and I found the gilled straight tube radiator preferred: in case of accident the tubes can be easily replaced. Radiators.

Double ignition is generally preferred, namely, coil and accumulator and high tension magneto. Ignition.

The high duty under the new tariff will prevent the importation of any large number of bodies. Their local manufacture is now being successfully carried on, but for some time the finest class of coach work will be imported. It must be remembered that heat and dust are important factors to be considered. Every part that is glued must, of course, also be screwed, and upholstery should be carried out in such a way as to minimise the collection of dust. Practically all cars are fitted with Cape cart hoods. Bodies.

Coils. It should be remembered that in Australia in particular, it is extremely hot in the sun, and if some precaution is not taken in the fixing to protect coils, they will very soon become defective, if not useless. Last summer in Melbourne, on more than one occasion a temperature of 120° F. was registered in the shade, at the same time in the sun 170° was often reached. Unless, therefore, it is protected in some way, the insulation will soon be destroyed.

Lower Gears
advisable. Cars for Australia and New Zealand should be geared rather lower than for English roads. Generally speaking, no car need have a speed above thirty-five miles an hour, while lightness and strength are qualities which must be aimed at in every car. I am aware that this latter combination of qualities is rather difficult and costly to attain, but, on the other hand, it must be remembered that a heavy car is not of much value on Australian roads, except for town use.

Classes of
Cars wanted. There is a good market in Australia for the sale of small cars for professional and business men, in such cities as Adelaide, Melbourne and Sydney. It has become the practice for the middle and upper classes to live either in the suburbs, or, as particularly in the case of Adelaide, in the hills surrounding the cities, and in such cases a handy car is rapidly growing in favour. There is also a good demand for the medium and high-powered cars amongst the large and wealthy squatter class in Australia and New Zealand. With these, absolute simplicity and reliability are the most important considerations.

One of the principal importers in New Zealand informed me that "there would be a good sale in this country for two or four cylinder cars of 10 h.p., weighing not more than 10 cwt., with a two-seater body, and 15 h.p. two-seater cars, weighing not more than 14 cwt." To get sufficient strength for local conditions, however, I am afraid it would not be easy to build cars so lightly at a low price.

Local
Industry. A few cars have been built, or partly built, locally, but there is little prospect for some years of any serious manufacturing being done. In the matter of tyres, however, the Dunlop Company have established a

factory and are selling excellent tyres at lower prices than those which are generally charged for imported ones.

I would urge upon British manufacturers to pay more attention to export business. Owing to the severe competition from continental firms at home the Colonial markets are probably as valuable to them as the home market if properly handled. Cars meeting the simple local conditions (which are very similar, not only in Australia and New Zealand but also in the South African Colonies, which I visited a few years ago) should find a large sale during the next few years, but one of the most important matters to consider is that of thorough standardisation. We all know the danger of over-standardisation, how it checks improvement, &c., but the Colonial motorist not having proper repair shops to fall back upon, must be able to purchase spare parts locally, which, when assembled in place will be found to work satisfactorily, practically without any fitting. Now the local dealer in motor cars, and their parts, will not stock parts of any car if continual alterations are made in designs. This was specially emphasised to me by a number of dealers. One firm in South Australia having an agency for a well-known car, told me that he had lost £2,000 by stocking spare parts one season, and finding that the design had, in the following year, been entirely altered, leaving him with little hope of ever disposing of his stock.

Export
Business.

Standardi-
sation
necessary.

It should now be possible to standardise most of the wearing parts in a car, and a firm making, say, two, four and six cylinder engines, could have in each engine similar connecting rods, small and big end bearings, engine brasses, valves and tappets, valve plugs, &c. In the case of two and four cylinder cars, the gear-boxes and transmission gear and back axle, and their wearing parts, might also be similar. In this way, agents in the Colonies, so far removed from the sources of supply of spare parts, would practically only have to carry one stock of parts of the same dimensions, which would fit two of the cars, and a stock of gear-boxes and axle parts for the six cylinder. There are, of course, limits to which this system could be carried,

Suggested
System for
Colonial
Cars.

but on the whole it is one which will always act to the advantage of motor manufacturers doing business in over-sea markets.

Small

Alterations a
Nuisance.

It is probable that there will be few radical departures from existing practice for some years, and before making small alterations to designs of cars for Colonial use, manufacturers will do well to consider the feelings and pockets of the men who are stocking spares and endeavouring to build up a trade for their productions in remote parts of the Empire.

Industrial Motor Vehicles, Tractors, and Traction Engines.

Delivery
Vans.

THERE will be a good market for motor delivery vans within the next few years in Australia and New Zealand, but very little headway seems to have been made with them up to the present time. Petrol and paraffin can be obtained at prices very similar to those prevailing at home, while, though horses are comparatively cheap, fodder, strange to say, is dearer than in England. The cost of stabling and labour is also higher. Another consideration is that at times of the year it is difficult to work horses in the streets owing to the excessive heat. Under these circumstances there is no doubt that motor vans will be very largely used in the near future.

Motor
Lorries.

Lorries are also growing in favour, not only for distance work but for handling goods between the warehouses and docks, which one finds in such magnitude in the large cities in Australia and New Zealand, countries which are, to a very great extent dependent on external trade. Owing to the condition of the roads motor waggons and lorries are not used to any great extent outside of the towns and suburbs.

Tractors and
Traction
Engines.

The recent years of prosperity which Australia has enjoyed has placed her agricultural industries in a strong position and owing to the dearth of labour



HAULING LOGS IN QUEENSLAND.



A WOOL TEAM EN ROUTE FOR THE SEABOARD, QUEENSLAND.



HAULING WOOL NEAR CANTERBURY, NEW ZEALAND.

THE TRACTION ENGINE IS RAPIDLY REPLACING HORSE HAULAGE.

and fodder the Australian is enterprising enough, and what is more has the means to purchase any machinery that will show him a saving in the cost of production. For this reason it will be found that there is a good market for tractors and traction engines, especially the former, but the farmer prefers a paraffin engine in preference to petrol driven. In many districts owing to the sandy nature of the soil a traction engine is too heavy, while the lighter tractor can be got about much more readily.

There is certainly business to be done in the large towns in motor cabs and cars for street work, as well as in motor 'buses. In the main street of Adelaide there are always to be seen a number of cars for hire. Those I saw were of various designs, from 8 h.p. to 25 h.p., but were all fitted with Cape cart-hoods (*see illustration*). On questioning two of the proprietors, who had a number of cars in use in this trade, I found that they were doing an extremely good business. I do not think there are motor cars for hiring in the streets of any other towns, but at several places I was questioned as to the most suitable British motor cab available. Several schemes are now on foot to start a cab service in Sydney and Melbourne, and British firms should be extremely active, as I found two foreign firms already looking into the business. and one had booked the first order for fifteen cabs for Melbourne. There is also a small amount of trade to be done in motor 'buses, although the failure of the Melbourne Motor 'Bus Service has raised a good deal of prejudice against this type of vehicle.

The Manufacturers' Association will be glad to give any of its members interested full information about any of the items referred to.

One caught little more than an impression of the state of foreign competition from the official statistics available, owing to the difficulties which Statisticians have to contend with in the way of "classification," and "country of origin" which it is almost impossible to trace. The following, however, are the figures

Motor Cabs
and 'Buses.

Foreign
Trade in
1906.

for 1906 for Australia, as recorded under certain headings :—

Classification.	United Kingdom.	France.	Germany.	United States.
"Motors" - -	£ 95,233	£ 46,627	£ 9,161	£ 7,776
"Vehicles, n.e.i."	7,996	20	5,406	11,856
"Minor articles for vehicles."	4,888	210	486	8,282
"Vehicles, n.e.i., parts thereof."	31,526	1,373	1,970	25,404

The last three items might, and probably do, refer in a measure to horse as well as motor vehicles, while the last item though including motor parts obviously refers principally to parts of horse vehicles as used in the manufacture of vehicles locally.

Motor Boats.

Very Large Market.

I am quite sure that British manufacturers have never realised the extent of the market for motor boats and launches, and engines and parts thereof that exists in Australia and New Zealand. I do not hesitate to say, and I speak from some experience, that the opportunities for business are much greater than exist in our home market. These Colonies boast probably the finest harbours to be found in any part of the world, and with a salubrious and dependable climate it is only natural that boating should be a very favourite pastime, while the wide commercial use that is made of them calls for boats and engines for business purposes. Americans have long ago recognised the value of this trade, and are already doing an excellent business.

Want of Enterprise.

This is a line of trade in which the British manufacturer has certainly not shown much enterprise, if one may judge from the small number of English-made boats and engines one sees in Australian waters.

Motor boating is particularly popular in Western Australia, and one may see moving on the Swan River, between Perth and Fremantle, more motor boats in one day than it is possible to see in any harbour, or on any river in England, and most of these are fitted with American engines, while the hulls are locally built. English boats have not much reputation locally. Some single-cylinder, long-stroke engines are also being fitted in the pearl fishery boats (*see illustration*) which are used along the northern coast of Western Australia. What is true of Fremantle and Perth might be written of Albany, Adelaide, Melbourne, Geelong, Sydney, Brisbane, Wellington, Auckland, Port Chalmers and a dozen other harbours.

While there are practically no engines being built locally, a good deal of boat-building is being done, and I saw some really excellent work turned out of some of the yards. Excepting in the very cheap boats, or the very expensive ones, Australians do not favour imported motor-boat or launch hulls. The opinion is held that they will not stand the hot weather like boats built locally of Australian hard woods.

It was curious to see the methods adopted by American manufacturers to sell their motor-boat sets. Not only do they send them to Australia on consignment, but get all kinds of traders to sell them. I saw their engines in the shop windows of hardware houses as well as firms with businesses so divergent as books and stationery.

There is plenty of scope, however, for British manufacturers, if they will only realise the importance of the trade, manufacture in quantity, thoroughly standardise, and sell cheaply.

Leather and Manufactures thereof.

DURING the past few years there has been a gradual growth in the production of leather in Australia, but no figures are available which will show the actual output. The annual export of Australian leather, however, has

increased from £520,000 in 1903 to £547,000 in 1906, the greater portion of this being sent away from New South Wales, though it is not possible to ascertain what proportion was actually produced in that State. The value of leather imported into Australia has shown a marked increase from £202,000 in 1903 to £380,000 in 1906.

Boots and
Shoes.

In 1907 boots and shoes to the value of £360,386 were imported into Australia as compared with £342,487 for 1906. Although the United Kingdom supplied a great part she is experiencing keen rivalry from the United States and other countries, as will be seen by referring to the table given on p. 197. The severest competition, however, comes from local manufactures, and the new tariff will undoubtedly make this a still more important factor for British traders to contend with. In men's, youths', boys', women's, and girls', of a total of £118,954 worth, the United States contributed £42,544 in 1906 compared with Great Britain's £67,274, while Austria's share was £4,357. In boots and shoes, "n.e.i.," the shares of the respective countries are:—United Kingdom, £27,895; United States, £13,337; and Austria, £6,468. In rubber sand-shoes, infants' boots, shoes, and slippers, Great Britain easily predominates, but when we look at the trade in "minor articles" we find that the United States contribution is no less than £19,477 compared with the British £29,791.

Of Australian manufactures of leather the following are the figures for 1903 to 1906, inclusive:—

Year.	Boots and Shoes.			Leather.
	Men's, &c., of Leather.	N.E.I.	Infants'.	Manufactures N.E.I.
1903	£ 162,580	£ 56,485	£ 52,637	£ 42,459
1904	156,339	57,725	58,323	56,378
1905	113,755	59,265	48,042	53,876
1906	118,954	58,604	54,965	60,908

It will be seen by the foregoing figures that while imports of leather have increased the imports of boots have decreased, indicating the growth of the local boot manufacturing industry.

The latter industry in New Zealand shows a substantial decline in the past few years in the number of hides and skins tanned as well as leather manufactures. For hides the number fell from 178,075 in 1900 to 124,695 in 1905, and skins from 272,775 to 191,496 in the same years respectively.

On the other hand, the importations of leather and leather ware have greatly increased, from £99,000 in 1904 to £136,000 in 1907. While in the same period the imports of boots and shoes were increased from £256,000 to £290,000.

Excluding rubber goods the condition of foreign competition in boots and shoes is indicated in the following table :—

Countries.	1907.	1906.	1905.	1904.
United Kingdom -	£ 202,146	£ 198,995	£ 181,782	£ 135,852
United States -	28,938	41,864	56,150	83,884
Canada - -	3,745	7,786	8,416	11,112
Australia - -	30,385	23,264	15,235	10,598
Other Countries -	4,997	2,960	4,421	3,608
	£270,211	£274,869	£266,004	£245,054

There is no doubt that British trade has benefited considerably through the preference which she received on this item, but, as I have elsewhere pointed out, these figures only show the country of "shipment" and not the country of "origin." From enquiries which I made I am convinced that the foreign share of this trade is greater than that indicated. What value of German, French and Austrian come in *viâ* Australia, and what American *viâ* Liverpool and British steamers, it is impossible to state, but the value is in my opinion not inconsiderable. Next year's figures will possibly show

New Zealand
Industry.

New Zealand
Imports.

Boots and
Shoes.

Effect of
Preference.

a decrease in the total imports. The recently increased general tariff on these goods will undoubtedly stimulate local industry to some extent.

New Zealand Imports.

Of the importation of leather in 1904, of the value of £80,220, the returns indicate that £31,264 came from the United Kingdom, a share that was increased to £45,946 of a total of about £118,000 for 1907. In the same period the share of British Possessions, chiefly Victoria and New South Wales, sprang from £23,525 to £50,187, while the share of foreign countries decreased from £25,433 to about £21,374.

The imports from Australia, while representing substantially the products of New South Wales and Victoria, probably include a quantity of German as well as United Kingdom leather.

Permanent Market.

There will always be a demand throughout Australasia for the best class of English leathers for boots and shoes and other special purposes requiring the finest qualities. It is generally acknowledged that there is no leather equal in quality to the English oak bark tannage. Wattle bark is generally used in local manufacture but the results obtained are inferior to those obtained by oak bark in our own country. In Australia all shades of brown leather for boot uppers, portmanteaus, bags, &c., are successfully produced and the latter articles are locally sold at prices much below those usually obtained in this country.

Glass and Glassware.

Severe Competition.

IN no line of trade with Australasia does the British manufacturer meet with severer competition than in this one, and while he has a tariff preference on some items in both Australia and New Zealand, I do not think it is sufficient to enable him to compete effectually with foreign productions. Germany, Belgium and the United States are making headway against our own country, while local industries in Australia are successfully fighting all outside competition for certain lines—particularly glass bottles and such goods.

I could find no evidence that British trade was suffering from want of enterprise or deficient representation, and it was generally admitted that the quality of British glass and glassware was superior to any other in the market. It was all a question of price. Foreign firms are able to sell cheap qualities—which form the bulk of the trade—at prices considerably below those which British manufacturers can afford to quote.

Foreign
Firms under-
selling.

Let us, for a moment, examine the present condition of competition from foreign countries. In 1906 the imports into Australia of bent, bevelled, etched, &c. polished plate and sheet glass from the United Kingdom were £17,889, from Germany, £37,991, and Belgium, £59,639. It will be seen that Germany's trade is twice as large as our own, and Belgium's three times greater. When we come to glassware and miscellaneous glass we shall also find competition extremely severe from foreign competitors as well as local industries. The figures are : United Kingdom, £72,734 ; United States, £26,222 ; Germany, £71,834 ; and Belgium, £7,151. A small quantity came also from France and other countries.

Australian
Import
Trade.

With regard to local industries a considerable impetus has been given to these by the new protective tariff, and increased competition from them must be looked for. The manager of one of the largest factories is at present in England engaging a number of skilled hands and investigating the latest methods of production. He afterwards intends visiting Belgium, Germany and Austria with a similar object.

Australian
Industries.

There are factories in each of the six States of the Commonwealth, but the principal are in or near Melbourne and Sydney. Unfortunately there are no statistics available of much value relating to this industry, but there is little doubt that it will now progress very rapidly. Glass bottles of Australian make to the value of £7,343 were exported in 1903, and £16,409 in 1906. New Zealand is the principal customer, though some find their way to South Africa, Japan and the South Seas. There is a growing manufacture of stained glass.

Australia
Exporting.

There is no local production of any value in New Zealand, and while the market is more hopeful for the

New Zealand
Trade.

Misleading
Statistics.

British Trade
declining.

Reasons for
British de-
cline.

British manufacturer than that of Australia, competition with Belgium, Germany and America is very severe, though this is not made clear in the statistics available. For instance, for 1907 the total value of imports of glass bottles (empty) was £59,003, and the shares of the principal exporting countries are given as follows : United Kingdom, £24,977 ; Victoria, £7,373 ; New South Wales, £17,962 ; Germany, £3,466 ; United States, £4,460 ; and Belgium, £451. It is well known to those locally interested in the trade, that a good proportion of the British share should be credited to America, Germany and Belgium, and some of that of New South Wales, to which State large quantities of Continental goods are brought out by the direct German and French shipping services. On the other hand, we know from Australian statistics that Australian bottles do find their way to this market in substantial quantities. Again, according to official figures, Great Britain holds the bulk of the trade in " Mirrors and Looking-glasses," " Plate, Bevelled, &c.," and " Plate, Other Kinds," but in window glass Belgium controls the principal share, while in glassware the United Kingdom's share equals that of all foreign countries. The total value of trade in the latter line is £53,175. As a matter of fact little reliance can be placed on these figures. The trade is cut up by foreign competition nearly as badly as in Australia, and British manufacturers would fare very much worse if they did not get the benefit of a substantial preference on some items.

The Australian agent of the largest British firm of plate glass manufacturers put before me very plainly the main facts concerning the position of the British manufacturer, and I cannot do better than repeat his words. He said : " The import of foreign glass into Great Britain is free, whereas the import of glass into the Continental countries and the United States is subjected to heavy duties, ranging from 10 per cent. to 80 per cent. The foreign manufacturer can manufacture his glass at home and obtain a good profit in his protected home market, a fact which enables him to deliver his surplus production in competition with the British product in the British market at prices

giving him little or no profit as compared with what he gets at home, but which makes the profit of the English maker infinitesimal or nil. It may be mentioned, in 1904, the footage of foreign plate glass imported into Great Britain exceeded the home production nearly $2\frac{1}{4}$ times.

“Railway rates abroad are much cheaper than in Great Britain. For instance, the Belgian manufacturer has the great advantage of delivering his wares to Antwerp from the Charleroi and other districts over State subsidised railways, at rates greatly reduced in comparison with those charged on the British railways. The British manufacturer has to pay full railway rates on the non-subsidised railways leading to the British seaports.

Influence of
Railway
Rates.

“In the United Kingdom the workmen cease work on Saturday mid-day, resuming it on Monday morning. The continental workmen work the whole Saturday, and the whole of Sunday too. The foreign manufacturer thus obtains the advantage of seven days’ labour as against an average of five-and-a-half days’ labour in the United Kingdom. Further, the English manufacturer during the period of rest by the workmen on Saturday and Sunday has to maintain his furnaces at full heat for thirty-two (32) hours without obtaining any return therefor, a very serious disadvantage. The rate of wages paid by the foreign manufacturer is much lower than that paid in the United Kingdom, enabling the manufacturer to make glass at a lower cost. It is thus obvious that the British manufacturer labours under heavy disadvantages compared with the foreign manufacturer. The Belgian manufacturer has an advantage amounting to as much as 25 per cent. in the matter of cost.”

Labour
Conditions
compared.

If in addition to the above statement is added the fact that foreign glass is carried to Australia at substantially lower freight rates than British glass, it will be seen what enormous difficulties the British manufacturer has to deal with to get trade at the present time in Australia. There is, of course, trade to be got, otherwise British firms would not be represented there, but it is particularly obtained for special qualities and patterns rather than for ordinary commercial glass.

Foreigner
enjoys lower
Freight
Rates.

Photographic Apparatus and Supplies.

Trade
Prosperous.

THE photographic trade in Australia at the present time is in a prosperous condition ; photography in all its branches is extremely popular. Not only is the climate specially suitable for carrying on the trade and pastime, but owing to the prosperous years which Australia has been enjoying, employment is general throughout the country, and ample wages and profits give the people large spending powers. This condition of things has a marked effect on a trade such as this which, apart from the educational feature, may be regarded as a luxury. During the past year much unrest was experienced in the trade through the uncertainty of the tariff, but now that it has been finally settled, business has resumed its normal course.

Local
Industries.

One notable result of the new tariff is the activity in local manufacture. A new dry-plate manufacturing company has been started in Victoria, whilst a well-known American firm, it is stated, is about to manufacture films, plates, papers, and other photographic goods—in other words, it is about to exploit Australia, having its headquarters in Melbourne. Already the locally-made bromide and gaslight papers are in greatest demand, with the British close up ; American, German, French, and others behind in order.

Foreign
Competition.

American goods are still largely in the Australian market, but are losing ground to goods of British manufacture, especially in cameras, papers, plates and films. This is due mainly to the action of a British manufacturing firm having amalgamated with other manufacturers, thus enabling the one house to issue a catalogue showing a complete line of instruments and materials, and enabling them to supply everything the photographic dealer in the Colonies might require. This also enables the firm to cater more systematically and economically for export business. The preferential tariff must considerably help the British article,

and the feeling of the public is in a great measure favourable to British goods.

The official statistics relating to this trade are not of much value. For instance, the item including cameras also includes phonographs, &c., which might account for £20,000 of the United States' share in the following:—"Phonographs, cameras, magic lanterns and the like," imported in 1906, £137,487. Of this value the United Kingdom's share is £41,117; Germany's, £9,889; Belgium's, £5,550; France's, £1,902; and the United States, £78,508. "Dry plates, sensitized films and paper," were imported to a total value of £35,936, of which the United Kingdom is credited with £30,921; United States £4,595, and Germany £158! As a matter of fact, the British value as given is too high, and the German too low. German papers have been systematically exported from London as British. The attention of the Commonwealth Government has been drawn to the matter by the Manufacturers' Association.

In lenses, German goods still are much in favour, with the British coming close. French goods, save for autochrome plates, are practically out of the market; this does not apply, however, to cinematograph films. In this branch of the trade there is considerable activity. The business done in cinematograph machines and films is growing, but the sale of new subjects is limited on account of the small and scattered population not being sufficient to warrant exhibitors buying, and they are therefore compelled to hire. The British, American and French being in equal demand, and practically all the greatest manufactories of the world send their films to this market. The number of exhibitors is increasing throughout the country, and altogether this branch is a very important one to the photographic houses.

As to the various styles of cameras on the market—the demand is steady for the light stand camera—the magazine, box-form, and folding styles being about equal. The Reflex is being much sought after, and new and improved types always sell. Portability is an appreciated feature in all makes. The lens calls for

Extent of
Import
Trade.

Cinematographs.

Cameras.

much attention, and the Anastigmat of a cheaper grade is in demand with low-priced cameras—the public understanding the value of such instruments much more now than a few years back. Covering power is almost an essential quality in the lens when an outfit is being sought for.

Printing
Papers.

In the choice of papers there is still a strong demand for the glossy surface, but papers of a semi-matt surface are also in favour. Rough surfaces are in growing demand, especially among amateurs of the pictorial school—an increasing power in the field. Gaslight papers hold the lead, with self-toning P.O.P. very strong—ordinary P.O.P. has lost ground to the more quickly worked kinds. Collodion papers are not too popular owing to their curling and crackling tendencies. In professional portraiture the demand for the matt-surface print seems to be increasing, and papers of a high grade are in demand, as the public taste is very much improved of late years, and artistic results are appreciated.

Novelties
wanted.

Novelties attract the growing army of amateurs on the look-out for something new in apparatus to simplify their work. Tank developing is a coming vogue. Tabloid and packet goods, such as developers, &c., are greatly appreciated.

Future
Prospects.

To show the rate at which Australia is growing, the progress of Sydney may be taken as a guide for the rest of the Continent. It has been calculated that since 1881 to date, the metropolitan population has increased at the rate of $3\frac{1}{2}$ per cent. If this rate is maintained for another sixteen years the city will have a million people, with a proportionate increase throughout the country. What this means to the photographic trade can easily be computed, as the amateur photographer is the incentive to the trade.

Cement.

German
Competition.

THERE is a good deal of competition from Germany or this trade, and though their brands have not so good a reputation as English, they are often able to

quote lower prices on account of being able to secure lower freight rates.

Local industries find a sale for all that they can produce, and while the purchases from Great Britain will not diminish, owing to the number of large public works being undertaken, yet the local production is a factor which will assume an increasing importance every year. Local Industries.

The Commonwealth Portland Cement Co., Ltd., with a capital of a quarter of a million, has a finely equipped works, situated at Portland, 119 miles north-west of Sydney. The works are equipped with the latest types of machinery imported from Great Britain and the Continent of Europe, while some have been built by the Clyde Engineering Co. of Sydney. The enterprise is remarkable for the occurrence of all the raw materials of excellent quality and in inexhaustible quantities, and of coal, on the same property, conditions which it is believed do not exist in any other similar undertaking. A Big Concern.

The raw materials, limestone, clay, and shale, are mined in the near neighbourhood of the works. Power is derived from coal obtained from the Company's Ivanhoe Colliery, situated at a short distance from the works; it is generated by a 600 horse-power steam engine, which drives the whole of the milling and mixing plant, and by a three-phase alternate current generator in conjunction with a 350 horse-power steam engine. The application of electricity permits the detached plants to be independent of the main shaft. The process for manufacturing cement is that known as the dry process in conjunction with the system of rotary kilns. It is briefly the following :—The raw materials—limestone, clay, and shale—are roughly crushed and then dried in rotary steel cylinders, from which they are taken into the raw mill building, where they are mixed in their proper proportion, coarsely ground by Krupp ball mills, and subsequently to great fineness by Krupp tube mills. The impalpable mixture, termed "raw meal," is mixed until complete homogeneousness is achieved, upon which the success of the process depends. The raw meal is then ready for being transformed by calcination into "clinker." For that purpose it is continuously An Interesting Equipment.

charged into four steel rotary kilns 365 feet long, and one 80 feet in diameter, and lined with fire-bricks. The kilns are set on a slight angle, and revolve slowly. The raw meal fed in at the upper end passes slowly through the cylinders, exposed all the time to the intense heat produced by the burning of coal dust blown in with warm air at the lower end, which effects the chemical reaction between the various components of the raw meal. The resulting clinker drops out at the lower end of the kilns into rotating cooling drums, and is from there conveyed to the cement mill, where it is ground to impalpable fineness, by machinery similar to that described in the raw mill, and forms then the "Union" Portland cement of commerce. The works include large repair shops, and an extensive plant for manufacturing cement casks from the log, whereby the Company is enabled to carry on an export trade throughout Australasia, and beyond its limits.

A Victoria
Enterprise.

Another enterprise of interest is the Victoria Portland Cement Works, Melbourne. The manufacture here was commenced upon the double kilning wet process, which was altered about six years later to the direct dry method. Recently, the dry process has undergone a change—a complete rotary burning plant having been erected. The raw materials used in the manufacture are obtained from the proprietors' own quarries at Lilydale, Lara, and Waurin Ponds.

South
Australia.

In South Australia there is also a well-equipped works owned by the South Australia Portland Cement Co., of Brighton. The product of this works has been used in the Adelaide Waterworks schemes, and many of the large buildings recently erected in that city.

New Zea-
land.

In New Zealand an increasing quantity of cement is being produced locally every year.

Miscellaneous Trade Notes.

Office Furni-
ture and
Supplies.

ONE of the largest dealers in office furniture in Australasia sent me the following statement :—"As the largest dealers in office furniture, filing cabinets, &c., we

have to report that it is absolutely impossible to purchase these lines from Great Britain, due in the first instance to the first cost, and then added thereto the high rates of freight payable from Great Britain. High Freight Rates. It is possibly only fair that we should here state that we fully recognise that the manufacturer in Great Britain is only just awakening to the enormous future there is for this particular class of business. From an intimate knowledge we believe that New Zealand in regard to up-to-date office equipment is considerably ahead of the average British mercantile house. Here in New Zealand a most extensive business is being done in card index supplies, one of the greatest labour-saving devices that has been introduced during recent years. It seems to us that British manufacturers are only touching the very fringe of this business, and there are tremendous possibilities if he can but compete with the States, and also Canada—for this country is becoming a strong competitor, especially in view of the preference given it by our Government in regard to duties payable.

The same firm states : "We believe there are considerable openings for trade in office furniture, including Scope for Enterprise. desks (both flat and roll top), filing cabinets, card index cabinets, card index supplies, chairs (the ordinary office, revolving, and a really good stenographers' chair). Having regard to the afore-mentioned goods, it must be impressed upon the British manufacturer that it is worse than useless attempting to do business unless he can furnish goods equal to, in appearance and adaptability, those manufactured by his cousins across the water. We have done an enormous business, for instance, in stenographers' chairs ; these are fitted with adjustable backs, which adapt themselves to the requirements of the operator, but we do not know of a single British manufacturer who has ever attempted to make these chairs. When there are any manufacturers capable of carrying out the above-mentioned conditions we shall be quite prepared to negotiate *re* agencies."

Germany and America are steadily capturing the trade in seeds in Australia and New Zealand. The

trade is one in which there is a good deal of competition locally and prices are finely cut. The reason given to me for the loss of British trade in this line, repeated in at least a dozen instances, was higher freight rates from Great Britain. It is not only possible for Australian houses to get lower freights from Germany and America but the difference is usually as great as £1 a ton, and I know of one shipment where the difference amounted to £2 a ton. In a line where there is so much local competition it is easy to see that such a great difference in the cost of freight would prevent orders being placed in Great Britain.

Earthen-
ware, China,
and Glass.

The proprietor of one of the largest firms of general merchants in Sydney severely condemned British manufacturers of this line of goods for want of enterprise and adaptability. He had, on numerous occasions, endeavoured to induce British manufacturers to produce goods suitable for his trade, and he had been unsuccessful in every instance. To this conservative policy he attributed the fact that the trade in glass ware, of all kinds, decorated china ware, ornaments and vases, had gone into foreign hands, principally American, Belgian and German. He also severely criticised British methods of packing crockery. Owing to the weak character of the crates and casks in which the goods are sent out breakage is frequently very extensive and the shipping companies will not accept any liability for the damage, as they claim that the cases are not sufficiently strong for the contents. He urges British firms to adopt a standard strength of crate and cask and thus avoid the loss in this respect.

Belting.

There was £58,999 worth of composite belting imported into Australia in 1906, and of this amount Great Britain contributed £46,125, the United States £7,139, and Germany £5,603. The leather belting introduced was comparatively small, amounting only to £6,940, of which Great Britain contributed half. The reason for this small import is that local industries are supplying the needs to a very large extent. In some respects also composite belting has been found to withstand the climatic conditions better than leather belting in some parts of Australia.

Wholesale druggists complain that American houses put up their goods with more neatness and regularity in regard to get-up and labels than is done in English houses. This applies to drugs, patent medicines, and pills. Cases are sometimes received of similar goods, packed in clear as well as dark bottles, square and round. In going through the warehouses it was pointed out to me that the goods of American houses were put up in an uniform manner, and with some distinctive character in the bottles, labels and printing. For instance, one American firm always uses amber coloured bottles, which gives an easily distinguishable appearance.

Drugs and
Patent
Medicines.

A large quantity of typewriters of United States and Canadian origin are exported annually to Australia and New Zealand. In this instance, as in many others, agencies for foreign and colonial products are often given to firms stationed in England. I was pleased to note that a machine of British origin, namely the "Empire" typewriter, is rapidly gaining in favour. Cheapness, as I have pointed out in other parts of this Report, is an important consideration in Colonial trade, and as this excellent machine is little over half the price of the foreign standard productions and equally good in every respect, a large opening exists for it or any other machine that can fill the same specification.

APPENDICES.

APPENDIX I.

Commercial Travellers and Samples.

The following is a short statement of the conditions under which commercial travellers may carry on their business in Australia and New Zealand, and some information is given of the railway facilities, import duties, and other matters likely to be of interest. Most of the information given has been verified by the Agents-General for the Australian States and the High Commissioner for New Zealand.

AUSTRALIAN COMMONWEALTH.

Commercial travellers' samples are liable to the ordinary rates of import duty, but the amount may be deposited with the Customs for a period not exceeding six months, such amount being returned if the samples are exported within the prescribed time. A certificate to the effect that the duty has been paid or deposited will be recognised throughout the Commonwealth, if the samples can be readily identified on transfer. It is not necessary that the samples should be exported from the port at which they were imported, but application for refund (in cases where duty is deposited and goods are exported within six months of importation) with proof of exportation must be made to the collector at the port where the deposit was made. In cases where duty is paid outright, or deposited and not returned within six months, drawback of the full amount of duty is allowed on exportation of the goods beyond the limits of the Commonwealth.

Australian Commonwealth.

The conditions prevailing in the several States are:—

VICTORIA.

There are no special regulations or taxes existing in Victoria affecting British commercial travellers visiting this State, nor are such travellers required to take out licences to carry on their calling.

Victoria

On the Victorian railways, commercial travellers holding first class ordinary or periodical tickets are allowed $1\frac{1}{2}$ cwt. of samples free of charge; those holding second class periodical tickets are allowed 1 cwt. free. Any excess over these weights is carried at half ordinary parcel rates, with a minimum of 28 lbs. and a maximum of $12\frac{1}{2}$ cwt. Concessions in the matter of fares are made to commercial travellers of firms who forward certain quantities of goods over the railways annually.

The resident agents of British firms are liable to income tax in respect to their own salaries, bonuses, commissions, or earnings in Victoria. As agents they are liable also to assessment for their British firms in respect of the income or profit of those firms earned in Victoria. They are not liable to any licence fee.

NEW SOUTH WALES.

New South
Wales.

No special regulations exist affecting commercial travellers, and licences are not required by them.

On the railways of New South Wales commercial travellers are entitled to a free allowance of 2 cwt. of luggage if first class passengers and $1\frac{1}{2}$ cwt. if second class, provided that they travel with samples only in packages properly marked, and not with stock for sale. Commercial travellers between Sydney and Adelaide, Melbourne or Brisbane are allowed $1\frac{1}{2}$ cwt. of samples free if they travel first class and 1 cwt. if second class. Commercial travellers holding season tickets (annually, half-yearly, quarterly, or monthly) may compound for the payment of excess fees on their samples for the same periods.

QUEENSLAND.

Queensland.

There are no regulations or licences of any kind required for commercial travellers.

There are certain privileges accorded to commercial travellers on the Queensland railways. First class season tickets available for all railway lines cost £100 a year, £55 for six months, and £30 for three months. Second class tickets cost two-thirds of these rates. Commercial travellers are allowed 2 cwt. of free luggage in the first class, and $1\frac{1}{2}$ cwt. in the second, these quantities including personal luggage.

Resident agents of British firms in Queensland are not affected by any other taxes or licence fees except the ordinary business licence of £2.

SOUTH AUSTRALIA.

South Australia.

Commercial travellers are not taxed, they are not subject to any special regulations, nor are licences necessary.

No special privileges are accorded to commercial travellers so far as railway fares are concerned. The following are the special conditions relating to baggage:—

Commercial travellers with first class tickets are entitled to carry $1\frac{1}{2}$ cwt., and those holding second class tickets 1 cwt. of luggage (samples and personal luggage included) free, by the same train as they travel, any excess must be conveyed at full parcel rates on the outward journey, and free on the return journey when the receipt given at the station of original departure is produced. The allowance is only made when the samples are booked by passenger, not goods train. The department reserves the right to require a traveller to produce an authority from the firm he represents. Samples can be booked through, and the journey may be broken by the traveller with his samples, on his so arranging at the station from which he starts, provided he travel by the same train. When sent on break of journey note, samples are conveyed at owner's risk.

WESTERN AUSTRALIA.

Western Aus-
tralia.

There is no legislation in Western Australia regulating or taxing commercial travellers.

There are no fees or taxes payable by commercial travellers, unless the individuals acting as such sell under an auctioneer's licence or sell spirituous liquors, in which case the fees appertaining to each would have to be paid.

On the railways commercial travellers are allowed, free of charge, personal luggage and samples:—For each first class ticket, 2 cwt.; for each second class ticket, 1½ cwt. All excess weight of luggage over and above the weight allowed free will be charged parcels rates (minimum 1 cwt.), but on the return journey, bicycle and overweight samples accompanied by travellers will be conveyed free on production of the outward receipt.

TASMANIA.

No record can be found of any tax or any provision as to *Tasmania*. a licence being necessary.

Every commercial traveller journeying on the Tasmanian Government Railways is allowed to take 112 lbs. as samples or luggage free of charge, the same as ordinary passengers. Commercial travellers holding a first class annual season ticket available from any station to any station are allowed 2 cwt. of luggage free. On every 56 lbs. or fraction of 56 lbs. above this weight, for every 50 miles or fraction of 50 miles, the charge is 6d. On the Stralian-Zeehan line the charge on every 56 lbs. or fraction of 56 lbs. above this weight is 1s.

As regards resident agents of firms not domiciled in the Colony it is to be noted that there is an importer's licence of £10 per annum payable at the State Treasury.

NEW ZEALAND.

Commercial travellers, whether representing one or more *New Zealand*. firms, are required, on arrival in New Zealand, to pay a deposit—usually about £5—as a guarantee that the income tax due on the business done in the Colony will be paid. The deposit is held until the traveller is in a position to furnish a return of the total business resulting from the visit, when an adjustment is made by refund if the deposit exceeds the tax payable, or by a claim for the balance of tax if the deposit is less than the amount payable. The assessment is made in accordance with the provisions of Section 12, Subsection 6, of the Land and Income Assessment Act, 1900, as amended by Section 3 of the Amending Act, 1903.

The traveller on his arrival also receives a warrant permitting him to exercise his calling. The warrant is issued free on the payment of the deposit. The penalty for carrying on business without the warrant is not less than £2, nor more than £50.

Principals of firms travelling to take orders or to visit their customers are subject to the same provisions as their representatives or agents. They are required to pay a deposit and take out a warrant. Section 12 (1) of the Act referred to enacts that "It shall not be lawful for . . . any non-resident trader to carry on business unless he is the holder of a warrant in that behalf from the Commissioner or a Collector of Customs."

On New Zealand railways commercial travellers are allowed 112 lbs. of luggage and samples free of charge, any excess over that up to 10 cwt. being charged at 6d. for every 56 lbs. or fraction of 56 lbs. for every 50 miles or fraction of 50 miles, being half the rate charged to the ordinary public.

Duty is to be paid or secured on all samples of sufficient value for duty, including odd gloves, boots, and the like, which

are to be treated as of half the value of the complete articles. If a traveller signifies his intention to export his samples he may be permitted to pass a "sight entry," examine the samples and assess the value thereof with the examining officer; a sufficient deposit, calculated to the nearest pound above the duty, has to be taken, and a reasonable time fixed within which a certificate of exportation is to be produced. In default of such production, the amount deposited is forfeited. A duplicate of the sight entry, with an examination account and with these particulars stated thereon, is given to the traveller, who is told that, in order to secure the return of his deposit, he must produce his samples to the Examining Officer at the final port of departure from the Colony, for examination and comparison with the sight entry, and obtain from him a certificate of exportation, to be given upon the duplicate sight entry. The above regulations are to apply only to samples in quantities not greater than are absolutely necessary for exhibiting the class of goods the traveller is desirous of taking orders for; anything beyond this is to be treated as merchandise, and entered for in the usual way.

Resident agents of British firms are not subject to any licence fee for income-tax purposes. In their own private assessments they are entitled to an exemption of £300, the same as any other resident. Non-resident taxpayers are not entitled to an exemption, but otherwise the British firm is taxed in the same manner as a local firm, the resident agent making an annual return showing the income derived in the Colony on behalf of his principals. The tax charged to commercial travellers and resident agents on behalf of their principals is at the same rate as to a local taxpayer.

THE COMMERCIAL TRAVELLERS' ASSOCIATION OF AUSTRALASIA.

The commercial travellers of Australia are a very highly organised body, and are provided in all the principal cities with excellent club houses, offices and sample warehouses. There is an association in each of the six Australian States and one in Dunedin, New Zealand. Then there is a federal body called the United Commercial Travellers' Association of Australasia, with which all the State Associations are affiliated. Commercial travellers intending to work the Australasian market and not having previously been acquainted with the countries, would do well to apply in advance for a visiting members' ticket, which entitles the holder to the *entrée* of the affiliated clubs throughout Australasia for a period of six months for one guinea, or for twelve months for two guineas. The club houses are residential, and it is a great privilege for visiting travellers to thus be able to make use of these houses for such a nominal subscription. Then the associations will provide the traveller with a list of "Association Houses," which include the hotels throughout Australia selected by the affiliated Associations, at which the traveller will be tolerably sure of obtaining good accommodation at moderate rates. Visiting members' tickets can be obtained on application to Mr. James Davies, General Secretary, 190, Flinders Street, Melbourne.

Notes on the Labour Laws of Australia.

(Compiled from the *Commonwealth Year Book*, 1907, and other sources.)

The following tabular statement shows at a glance the various statutes in the several States of the Commonwealth which affect, more or less directly, the conditions of labour generally :—

TABLE OF STATUTES.

New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.
Factories and Shops, 1896. Early Closing, 1899. " " 1900. " " 1906.	Factories and Shops, 1905 (2). Factories and Shops, 1907.	Factories and Shops, 1900.	Factories, 1894. " 1900. " 1904. " 1906. Early Closing, 1900— 1, 2, 3. Mining, 1893.	Factories, 1904. Early Closing, 1902. " 1904 (2). Seats for Shop Assistants, 1899.	Women and Children Employment, 1884. Women and Children Employment, 1905. Chimney Sweepers, 1882. Mining, 1900.
Mines Inspection, 1901. Coal Mine Regulation, 1902. Coal Mine Regulation, 1905. Miners' Accident Relief, 1900-1. Contractors' Debts, 1897.	Mines, 1897. Employers and Employees.	Mining, 1898. " 1901. " 1902.	Workers' Liens, 1893. " 1896.	Mines Regulation, 1906. Goldfields Act, 1895. Coal Mines Regulation, 1902. Sunday Labour in Mines, 1899.	—
Attachment of Wages Limitation, 1900.	—	Contractors' and Workmen's Lien, 1906. Wages, 1870. " 1874. Wages (as above).	Wages Attachment, 1898.	Workers' Wages, 1898.	Wages Attachment, 1900.

TABLE OF STATUTES—continued.

New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.
Public Health, 1896.	Health, 1890.	Health, 1886. " 1890.	—	Health, 1898. " 1906.	Public Health, 1903.
Truck, 1900-1. Shearers' Accommodation, 1901.	See Factories. —	See Factories. Shearers' and Sugar-workers' Accommodation, 1903-6.	See Factories. Shearers' Accommodation, 1905.	Truck, 1899, 1900-4. —	— —
—	Closer Settlement (Workers' Homes). Boilers' Inspection. Servants' Registry Offices, 1897.	—	—	—	—
—	—	—	—	Steam Boilers, 1897. Employment Brokers, 1897. Imported Labour Registry, 1897.	Inspection of Boilers. —
Masters and Servants. Apprentices, 1901.	Employers and Employés. Masters and Apprentices, 1890.	— Apprentices, 1828. " 1844. Master and Servants, 1861.	— Masters and Servants, 1878.	Masters and Apprentices, 1873. Masters and Servants, 1892.	Masters and Servants, 1856. " 1882. " 1884. " 1887.
Employers' Liability.	Employers and Employés (Employers' Liability).	Employers' Liability, 1886-8. Workers' Compensation, 1905.	Employers' Liability, 1884-9. Workers' Compensation, 1900. Workers' Compensation, 1904. Insolvency.	Employers' Liability, 1894. Workers' Compensation, 1902.	Employers' Liability, 1895, 1898, 1903.
Bankruptcy, 1898 (preference to wages). —	Insolvency. —	Insolvency, 1874-6. —	—	Insolvency. Associations Incorporation, 1895. Fisheries, 1899.	Bankruptcy, 1870, 1899. —

Eight hours a day, or, more accurately, forty-eight hours a week, constitute the limitation of time of labour recognised throughout Australia. The regulation is stated to have originated in Sydney in 1855, when it was demanded by the building employes, and after some friction conceded. The trades gradually urged a division of the day into equal periods for labour, recreation, and rest, and this has become established for a majority of occupations.

There is no general legislation to enforce this idea. The forty-eight hours' limit was, in 1873, enacted in Victoria with reference to women and children in factories, in 1874 with reference to miners, and in those instances is law throughout the Commonwealth. On the establishment of Wages Boards and Arbitration Courts, in the States where those institutions exist, the authorities thus created adopted the rule as part of their determinations and awards wherever it seemed reasonably applicable. Reasonable provision is, however, made by statute or award for overtime working. It may be said that there has been but little opposition in Australia to the establishment of the "eight hours" system.

All the States, excepting Tasmania, have statutes containing provisions respecting the hours during which shops may be kept open for business. These provisions, in effect, not only limit the hours during which shop-hands may be employed, but apply also where the shops are tended by the proprietor alone and by himself and family, with, however, certain exceptions, such as exist in the State of Victoria. In that State, shops wherein not more than one assistant, whether paid or not, is employed, are permitted to remain open for two hours a day longer than other shops of the same class. The object of this is to relieve the hardship which exists for such persons, for example, as widows who are wholly dependent for a livelihood upon the casual trade of small shops. Generally speaking, the hours during which shops may remain open for business are from 9 a.m. to 6 p.m., but these hours may be varied according to the nature of the business affected. Provision is also made for weekly half-holidays, on which shops must close entirely, with in some cases, however, compensatory provisions permitting them to remain open on one night a week.

LEGISLATIVE REGULATION OF WAGES AND TERMS OF CONTRACT.

Two systems, based upon different principles exist in Australia for the regulation of wages and general terms of contracts of employment. A "Wages Board" system exists in Victoria, South Australia, and Queensland, and an Arbitration Court in New South Wales and Western Australia. There is also the Arbitration Court of the Commonwealth, which has power, however, to deal only with matters extending beyond the limits of a single State.

WAGES BOARDS.

This system was introduced in Victoria by the Factories and Shops Act of 1896. The original Bill made provision only for the regulation of the wages of women and children, but was afterwards amended in Parliament to extend the system to adult operatives of both sexes.

The Act of 1896 made provision for the regulation of wages only in the clothing and furniture trades and the bread-making

and butchering trades. By an Act of 1900, the operations of the Act were extended to include all persons employed either inside or outside a "factory or workroom"—see sec. 4, i. (a)—in any trade usually carried on therein. This section is now in the Act of 1905. By an Act of 1907 the system was extended to all persons wheresoever employed in a "factory," trade, and also to shop employes, carters and drivers and their assistants, persons employed in connection with buildings or quarrying, or the preparation of firewood for sale or the distribution of wood, coke, or coal.

The regulation is effected by a Board, called a Special Board, to distinguish it from the Board of Health. Boards for the regulation of wages in the trades specified in the Act of 1896 are appointed as a matter of course, and by the Executive other Boards are appointed only if a resolution for appointment be passed by both Houses of Parliament. A Board consists of from four to ten members, who must be or have been at a recent time prior to appointment engaged in the trade concerned. Employers and employes are equally represented. If one-fifth of the employers or employes object to a representative nominated for them they may elect a representative. Originally the Board was elected in the first instance, but the difficulty of compiling electoral rolls led to the adoption of the present system, which has proved satisfactory. The Furniture Board is nominated outright owing to the preponderance of Chinese. An independent Chairman, nominated by the Board, is appointed by the Executive. A Board holds office for three years.

The Board has power to determine the lowest wages, prices, or rates to be paid to persons or classes of persons coming within the Act for wholly or partly preparing, manufacturing, or repairing articles, and for other services rendered, and may fix special rates for aged, infirm, and slow workers.

The Board fixes the hours of work and may limit the number of "improvers" to be employed (usually done by prescribing so many to each journeyman employed). There is no power in Victoria to limit the number of apprentices employed. Such a power exists in South Australia. The Board fixes the wages of apprentices and improvers according to age, sex, and experience, and may fix a graduated scale of rates calculated on the same basis. Apprentices bound for less than three years are improvers, unless the Minister sanctions a shorter period of apprenticeship on account of previous experience in the trade. The Minister may sanction the employment of an improver over twenty-one years of age at a rate proportionate to his experience. Out-workers in the clothing trade must be paid piece rates. Manufacturers may, by leave of the Board, fix their own piece rates, if calculated upon the average wages of time-workers as fixed by the Board.

Licences for twelve months to work at a fixed rate lower than the minimum rate may be granted by the Chief Inspector of Factories to persons unable to obtain employment by reason of age, slowness, or infirmity. Licences are renewable.

Determinations remain in force till altered by a Board or the Court of Appeal. These determinations apply to all cities and towns and such boroughs as the Executive determines, and the Executive may also apply them to any shire within ten miles of a city or town, or beyond that distance, if the shire council petitions to that effect. (Similar provisions are in force in other States.)

The children of an employer are exempt from a determination.

The Executive may direct a Board to fix out-workers' rates and the rates payable in allied trades.

Penalties are fixed for the direct or indirect contravention of determinations, the obedience to which is ascertained by examination of the records of wages, &c. (Sec. 4, i. a.)

A Court of Appeal, consisting of a Supreme Court Judge, has power to review determinations of the Boards. The Court may appoint assessors to assist the Judge.

The Acts fix an absolute weekly minimum wage, and the evasion of this provision in the case of females employed in the clothing trade by charging an apprenticeship premium is prevented by the prohibition of all such premiums in that particular case. This absolute minimum provision does not exist in New South Wales.

South Australia adopted the Wages Board system in 1900, 1904 South Australia. and 1906, but the first-mentioned Act was rendered inoperative owing to the disallowance by Parliament of regulations necessary for carrying it into effect. The Act of 1904 revived the Wages Board system in respect to women and children employed in clothing and whitework trades. The action of this statute was paralysed by a decision, the effect of which was to prevent the fixing of a graduated scale of wages as is done by the Victorian Boards. The necessity for some protection to the persons intended to be benefited by these statutes was urged in the annual reports of the Chief Inspector of Factories, but, until 1906, without effect. Many employers, however, voluntarily complied with the Boards' determinations, though these were without legal force. The system has been brought into full operation by the Act of 1906, which preceded the Victorian Act of 1907, in extending the system to other than factory trades, and is of a still wider scope than the Victorian Act.

In Queensland a Wages Board Act came into force in September Queensland. last, consisting of forty clauses and nine specimen schedules. Power is given to the Chief Inspector to prepare electors' rolls for the election of members of Special Boards, and all the electors must be eighteen years of age or over. For the purposes of the preparation of these rolls, every employer shall forward to the Chief Inspector, when required, a list of the persons employed by him. Every employer of any factory or shop in which rates are to be determined by a Special Board shall be enrolled as an elector of employers' representatives on the Board, and he shall be allowed one vote if the number of his employes be under ten, two votes when the number is above ten and under thirty, three when the number is above thirty and under sixty, and four votes when the number of the employes is over sixty.

Special provisions have been made respecting the preparation of the roll of electors of employers' representatives for a Special Board for men's and boys' clothing. According to these, an occupier of more than one factory may have his name on any particular roll to which he is entitled, but on not more than one. No person shall be permitted to be enrolled as an elector for both the representatives of employers and employes.

If a number of electors of representatives of employes on any Special Board working outside a factory or shop is greater than one-fifth of the whole number of electors who are employes, then the electors working outside a factory or shop shall be entitled to nominate candidates, and to vote for and elect one member of such Special Board; but shall not be entitled to nominate or vote

for any person as representative of persons working inside a factory or shop; and employes working in a factory or shop shall not be entitled to vote for any person nominated for election as a special representative of persons working outside a factory or shop. If the number of electors working outside a factory or shop is not greater than one-fifth of the whole number of electors who are employes, then the electors working outside a factory or shop shall be entitled to vote for the full number of persons to be elected as representatives of employes on such Special Board, but shall not be entitled to elect a special representative for outworkers only.

When an election is necessary, the Minister shall appoint a nomination and election day, and the Chief Inspector shall be the returning officer. The poll shall be taken by voting papers only, and no voting paper will be accepted after 4 p.m. on polling day. Voting papers will be posted at least four days prior to an election to every person entitled to vote for a particular Special Board. If necessary, the returning officer shall exercise his power of casting vote. Every Special Board shall meet at the office of the Inspector of Factories and Shops for the purpose of nominating a chairman, and thereafter at such other times and places as may be arranged by such Special Board. The Chief Inspector may direct some officer to act as secretary to each Special Board.

THE ARBITRATION COURT SYSTEM.

The Acts in force are as follows :—

South Australia : The Conciliation Act, 1894.

Western Australia : The Industrial Conciliation and Arbitration Act, 1902.

New South Wales : The Industrial Disputes Act, 1908.

Commonwealth : The Commonwealth Conciliation and Arbitration Act, 1904.

In Victoria in 1891, and in New South Wales in 1892, Acts were passed providing for the appointment of Boards of Conciliation, to which application might be made voluntarily by the contending parties. The awards of the Boards had not any binding force. Boards were applied for on but few occasions, their lack of power to enforce awards rendering them useless for the settlement of disputes.

The first Australian Act whereby one party could be summoned before, and, presumably, made subject as in proceedings of an ordinary court of law to the order of a court, was the South Australian Act of 1894. Its principles have been largely followed in other States, but it proved abortive in operation, and in many respects is superseded by the Wages Board system already described. Western Australia passed an Act in 1900—repealed and re-enacted with amendments in 1902—New South Wales followed in 1901 with an Act that was replaced by a new measure in 1908. A bill introduced into the Tasmanian Parliament in 1903 was rejected by the Upper Chamber. The Commonwealth Act, passed in 1904, applies only to industrial disputes extending beyond the limits of a single State.

APPENDIX III.

Notes on the Labour Laws of New Zealand.

(Compiled from the New Zealand Official Year Book, 1907, and other sources.)

The legislation passed by the General Assembly of New Zealand and termed the "labour laws" comprises the under-mentioned statutes and regulations made under various Acts:—

The Accidents Compensation Act, 1901.

The Accident Insurance Companies Act, 1902.

The Alcoholic Liquors Sale Control Act Amendment Act, 1895 :
Section 10 (*re* holiday on licensing-election day).

The Bank Holidays Act, 1902.

The Bankruptcy Act, 1892 : Sections 112 and 120 (*re* wages of employees).

The Coal Mines Act Compilation Act, 1905.

The Companies Act, 1893 : Sections 1 and 249 (*re* wages of employees of companies that are being wound up).

The Conspiracy Law Amendment Act, 1894 (*re* conspiracy in trade disputes, &c.).

The Contractors' and Workmen's Lien Act, 1892. (*See also* Threshing-machine Owners' Lien Act.)

The Criminal Code Act, 1893 : Sections 150 and 213 (*re* masters and apprentices).

The Deaths by Accidents Compensation Act, 1880. (*See also* Legitimation Act.)

The Electoral Act, 1905 : Section 115 (*re* holiday on election-day).

The Employers' Liability Act, 1882, with amendments of 1891 and 1892.

The Factories Act, 1901, with amendments of 1902, 1905, and 1906.

The Government Advances to Workers Act, 1906.

The Industrial Conciliation and Arbitration Acts Compilation Act, 1905, and Amendment Acts, 1905 and 1906.

The Inspection of Machinery Act, 1902, with amendment of 1903.

The Kauri-gum Industry Act, 1898, and Amendment Acts of 1899, 1902, and 1903.

The Labour Day Act, 1899.

The Labour Department Act, 1903.

The Land for Settlements Consolidation Act, 1900 : Section 13 (*provision for workmen's homes*).

The Legitimation Act, 1894 : Section 6. (*See* Deaths by Accident Compensation Act.)

The Licensing Act, 1881 : Section 131 (*re* payment of wages at houses where liquor is sold).

The Master and Apprentice Act, 1865. Master and Apprentice :
Extract from the Criminal Code Act, 1893, sections 150 and 213.

The Mining Act Compilation Act, 1905, and Amendment Acts of 1905 and 1906.

The Public Contracts Act, 1900.

The Servants' Registry Offices Act, 1895.

The Scaffolding Inspection Act, 1906.

The Shearers' Accommodation Act, 1898.

The Shipping and Seamen Act, 1903, and Amendment Act, 1905.

The Shops and Offices Act, 1904, and Amendment Act, 1905.

The Statute Law Amendment Act, 1906: Sections 10 and 11.

The Threshing-machine Owners' Lien Act, 1895.

The Trade Union Act, 1878, and Amendment Act, 1896.

The Truck Act, 1891.

The Wages Attachment Act, 1895.

The Wages Protection Act, 1899 (forming part of and to be read with the Truck Act, 1891).

The Workers' Compensation for Accidents Act, 1900, with amendments of 1902, 1903, 1904, and 1905.

The Workers' Dwellings Act, 1905, and Amendment Acts of 1905 and 1906.

The Workmen's Wages Act, 1893.

The labour laws have been passed in the effort to regulate certain conditions affecting employer and employed. Their scope embraces many difficult positions into which the exigencies of modern industrial life have forced those engaged in trades and handicrafts. The general tendency of these laws is to ameliorate the position of the worker by preventing social oppression through undue influences, or through unsatisfactory conditions of sanitation. It will undoubtedly be found that, with the advance of time, these laws are capable of improvement and amendment; but they have already done much to make the lives of operatives of fuller and more healthy growth, and their aim is to prevent the installation of abuses before such abuses attain formidable dimensions.

The manufacturing population in New Zealand differs from that in some of the Australian States by its wide dispersion. The capital city has hitherto been unable to draw to itself the industrial ability of the other provincial centres; and not only do Auckland, Christchurch, and Dunedin vie with Wellington as centres of population, but also as *nuclei* of commercial activity. In the second-class towns, such as Palmerston North, Wanganui, Nelson, Napier, Invercargill, &c., many important works are being carried on, while even in the villages and rural districts the progress of new settlement necessitates the manufacture of articles which in older communities are produced in specialised localities. Men scattered widely at the numerous occupations of colonial country life, shearing, harvesting, bushfelling, road-making, or sailing coastal vessels, &c., require legal protection against the dangers and disabilities to which their callings expose them. This general dispersion of industry necessitates not only a wide system of supervision, but legislative measures of a peculiar character, at once sufficiently elastic to comprehend many varieties of function, and yet rigid to crush any apparent abuse.

The following explanatory notes on the labour laws of the Colony are by Mr. E. Tregear, Secretary for Labour:—

"By far the most interesting and original of these laws is the Industrial Conciliation and Arbitration Act, first passed in 1894. This, with three later amending Acts, was consolidated in 1900, but has been amended afresh in 1901, 1903, and 1904. The substance of all these may be found in the Industrial Conciliation and Arbitration Acts Compilation Act, 1905; but it has to be supplemented with the amending Act of 1905. The necessity of

continuous amendment has been thrust upon the Legislature through the principle of industrial arbitration of a judicial character being entirely unique and without statutory precedent. The law on this subject has to be kept flexible in order to meet the continual necessities of change and growth. As difficulties impossible to foresee arise on the untrodden ground, they have to be met by new efforts to cope with the new situation, and with the knowledge which can only be born with experience.

"Societies consisting of two or more employers, or of seven or more workers may be registered and become subject to the provisions of the Act under the title of 'industrial union.' Any such union may bring a trade dispute before the Board of Conciliation, which Board may proceed to investigate the dispute, or, on requirement of one of the parties may refer the case direct to the Arbitration Court. If the dispute is left to the Board, after taking evidence, &c., the Board may make a recommendation, which, if accepted by the parties, is put into the form of an industrial agreement and has the force of law. If the Board's recommendation is ignored for a month it automatically becomes law, but if rejected the dispute is carried to the Court of Arbitration. This Court, consisting of a President, who is a Judge of the Supreme Court, and two other members—one elected by the employers' unions, the other by the workers' unions—has wide powers, and against its decisions there is no appeal. Inspectors of Factories are Inspectors of Awards under the Arbitration Act. The later amendments of the Act are mostly in the direction of giving wider notice of Court sittings, of arranging for permits being given at lower rates than the minimum wage mentioned in the award, and of greater strictness in matters threatening to bring about a strike or lock-out.

"The Factories Act, 1901, is a consolidation of former legislation, but with important amendments within itself and in the years 1902, 1905, and 1906. The Acts passed prior to 1901 dealt almost exclusively with the protection of working women and children, but the existing law takes cognisance also of the working hours of men, and arranges for payment being made for overtime work. The forty-five-hour week is insisted on for women and youths, except in woollen mills, where forty-eight hours are allowed, but if men are employed over forty-eight hours in one week overtime must be paid. The wages of young persons, the statutory holidays (with payment therefor), the regulated hours of overtime, the sanitation and hygiene of factories, provision of fire escapes, drinking water, &c., are all carefully arranged for under this Act. Any establishment wherein two or more persons work to produce articles intended for sale is a factory in New Zealand. All bakehouses, all laundries, and all places wherein Asiatics are employed are also factories, even if only one person is employed therein. This low limit is made mainly for the purpose of inspection, in order that the public should not be injured by taint on food or clothing manufactured in filthy surroundings. 'Sweating' has almost disappeared in New Zealand by the prohibition of sub-contracting in the issue of textiles to be made up into garments. The Factories Act is probably one of the most complete and perfect laws to be found on the statute book of any Colony, and is greatly appreciated by the workers, while the honest, fair-dealing employer is himself thereby protected from the unscrupulous proceedings of the piratical competitor.

"The Shops and Offices Act, 1904, is the consolidation of the Shops and Shop Assistants Acts of 1894, 1895, 1896, and 1901, but was itself amended in 1905. The Act regulates the hours of assistants in shops, not allowing them to exceed fifty-two hours a week or more than nine hours a day, with some exceptions. The shops are to be kept clean, and to have sanitary conditions necessary where two sexes are employed together.

"A weekly half-holiday is compulsory, but the particular day of the week is left to be chosen by each town separately. Compulsory closing of shops at any hour whatever is not insisted on unless under certain conditions whereby each trade is allowed to settle its closing hour by a majority vote of all shopkeepers. To all young persons wages of 5s. a week as a minimum must be paid, with an annual increase of 3s. per week until twenty years of age is reached. Overtime has to be paid for in both shops and offices, but some establishments, such as banks and shipping offices, are exempt.

"The hours of work and wages are subject to awards of the Arbitration Court.

"The Employers' Liability Act, 1882, added to and amended in 1891 and 1892, is designed to protect workmen from negligence on the part of employers by defining under what circumstances compensation for injury or death may be recoverable. The Act covers all employment except that of domestic service, and does not allow of 'contracting out' from its provisions, or permit the plea of 'common employment' to shield the employer or his agent for payment of damages if incurred.

"The last-mentioned Act has been practically superseded by the Workers' Compensation for Accidents Act, 1900 (amendments 1902, 1903, 1904, and 1905), because, while an accident to a worker had not to be compensated by an employer under the Employers' Liability Act unless such accident had occurred through his carelessness or through that of his agent, under the later Act all accidents are to be compensated unless they are caused by the serious and wilful misconduct of the person injured. This compensation is in no sense intended to be a punishment or penalty on the employer, but to be a means of providing for an injured workman or (in case of his death) for his family.

"A certain number of accidents take place—these numbers can almost be computed beforehand by actuarial experts—in spite of all that care and skill can do to prevent them. The workman, in case of industrial accident, had formerly not only the risk and pain to bear, but the money-loss of wages, the medical expenses, and in some events the ruin of his family, in order that profits might be made by others. Now the expense of accident is borne by the business itself as one of the legitimate expenses of carrying it on. To meet the difficulty of too great expense falling suddenly on an employer through his having to pay large accident compensation, provision is made by the Government Accident Insurance Act, 1899, which insures employers against risk of paying compensation. There are also several private insurance companies in the Colony which undertake these risks, and are regulated in some degree by the Accident Insurance Companies Act, 1902. The Workers' Compensation for Accidents Act allows compensation up to £400 in case of death, and a less sum for injury. 'Contracting out' is permitted if the alternative scheme is accepted as a fair equivalent by the Board of Conciliation of the district. The Accidents Compensation Act, 1901, provides that an independent

medical examination of the injured person may be ordered by the Judge before whom a claim of compensation for accident is brought. *See also* the Deaths by Accidents Compensation Act, 1880, which deals with the status of persons to be benefited by compensation, and also the Legitimation Act, 1894, which includes illegitimate children as legal recipients. The Statute Law Amendment Act, 1906, amends the Workers' Compensation for Accidents Act, 1900, as regards certain Court procedure.

"The Workmen's Wages Act, 1893, states that if a workman shall demand payment of wages twenty-four hours or more after they are due, and the wages are not paid, the worker can legally attach moneys payable to the contractor by the employer until such wages are paid. Without written agreement to the contrary, all wages must be paid at intervals of not more than one week. Before the passing of the Workers' Compensation for Accidents Act, 1900, it was ascertained that certain employers were taking out accident-insurance policies on their workpeople's risks, so as to remove their own liability in case of accident, and deducting premiums therefor from the wages of the workers. This was considered by the Legislature as not only tending to produce negligence or recklessness in employers and their agents or foremen, by removing from them the liability for damages through accidents, but was also condemned in principle, on the ground that it is against justice to allow an employer to make arbitrary deductions from any wage agreed upon and worked for. This caused the Wages Protection Act, 1899, to be passed. It prevents any deduction from lawfully earned wages as premiums for accident insurance, and makes any such deductions recoverable as debts within six months of such deductions being made.

"The Public Contracts Act, 1900, provides that in every contract let by a public body (such as the Government, a municipality, a Harbour Board, Education Board, &c.), the contractor must pay such rates to his men for wages, overtime, holidays, &c., as are generally considered usual and fair for such description of labour in that locality, or as fixed by the Court of Arbitration for the industrial district, whether the contractor is or is not a party to the award.

"The Truck Act, 1891, requires that payment of wages or earnings shall not be made in goods (technically known as 'truck' or barter), but in money, any contra-account notwithstanding; but there are a few exceptions, such as for advances for food, tools, &c., to men engaged in felling bush.

"In order to minimise the number of cases wherein fraudulent or unfortunate contractors formerly victimised their labourers, the Contractors' and Workmen's Lien Act, 1892, was brought into existence. This entitles a person who has done work on any land, building, or chattel to a lien upon such property. The lien is only to be exercised under certain restrictions, and for a limited amount; but it gives priority of claim for wages against other service, and enables legal proceedings for recovery to be taken before the attached property can be disposed of or alienated. With the Contractors' and Workmen's Lien Act, the Threshing-machine Owners' Lien Act, 1895, is also to be considered. Liens to be acquired for security of miners' wages are dealt with in the Mining Acts Compilation Act, 1905, and in the Mining Act Amendment Act, 1905.

"Among the enactments for the security of workers' wages may be noticed the Companies Act, 1903, which gives priority of

payment for wages or salaries above other debts in the event of the winding-up of a company, as the Bankruptcy Act, 1892, does in the case of ordinary bankruptcy. The Wages Attachment Act, 1895, prevents wages below £2 a week from being hypothecated for debt. It does not interfere with any workman being sued for debt in the ordinary course, but prevents a particular creditor from stepping in before others and seizing wages in advance before they are earned. The wages or earnings of coal miners are specially safeguarded in the Coal Mines Compilation Act, 1905, and all conditions of other miners in the Mining Acts Compilation Act, 1905, and the amending Acts of 1905 and 1906. No wages or payments of any kind may be made to workers in a public house or other premises licensed for the sale of alcoholic liquors; penalties are provided under the Licensing Act, 1881, for any such payment.

"The Kauri-gum Industry Act, 1898 (with its amending Acts of 1899, 1902, and 1903), regulates the conditions under which the fossil gum of the giant kauri-pine is dug and disposed of for sale. It specifies the different classes of settlers who may obtain licences for digging gum, the varieties of licences to dig and sell gum, and the particular lands on which the right to dig gum may be exercised.

"The Shearers' Accommodation Act, 1898, entails on Inspectors of Factories the duty of inspecting shearing sheds on farms, runs, and stations all over the Colony. Proper sleeping and other accommodation has to be provided for shearers—the most nomadic of workmen. If no provision is made, or if the accommodation is insufficient, formal notice has to be served on the owner or occupier in regard to improvements to be effected, and if the notice is disregarded or not fully complied with the offender can be brought before a magistrate and fined.

"The licences of registry offices for domestic or farm servants are regulated by the Servants' Registry Offices Act, 1895. This Act prevents friendless or uneducated persons from becoming the prey of unscrupulous persons. Applicants for licences as registry office keepers have to pay a fee to the Government and to present a certificate of good character. Proper ledgers and books, open to inspection, must be provided. Registry office keepers are not allowed to keep lodging-houses for servants or have any interest in such houses.

"The Shipping and Seamen Act, 1903 (with amending Act of 1905), contains all the existing legal provisions affecting the protection of life at sea of both sailors and passengers. They relate to the appointment of pilots, ships' officers and engineers, the engagement and discharge of sailors, the sanitation, ventilation, or overloading of vessels, and the number of duly rated hands to be engaged in proportion to tonnage. They endeavour to prevent injustice to the sailor as to advance notes or payments in foreign money, and also specify penalties to be inflicted for desertion, disobedience, &c.

"The Inspection of Machinery Act, 1902 (with Amendment Act, 1903), has, as its name implies, the oversight of all machinery, whether on land or water. It also provides for proper persons being in charge of machinery, &c., and for certificates of engineers and others in charge of engines and boilers.

"The Labour Department Act, 1903, established that Department on a statutory basis, although it had been in practical existence for some years. Its duties are to administer the labour

laws, and to furnish information on all industrial matters, while power is given to certain of its officers to collect statistics with the authority wherewith a Crown Commissioner is invested.

"The Master and Apprentices Act, 1865, applies mainly to the indenturing of children to employers, such children being the offspring of destitute parents. In other respects the law of England is held to be the law governing the relations between master and apprentice in this Colony; but this is tempered by awards of the Arbitration Court, which allot the ratio of apprentices to journeymen engaged. Special sections of the main Act apply to the punishment of apprentices for absenting themselves from duty, and to the fine on a master for neglecting or ill-using his apprentice. The Criminal Code Act, 1893, sections 150 and 213, also relates to the proper care of apprentices by their masters.

"Combinations or associations of persons for regulating the trade relations between masters and masters, or masters and workmen, or workmen and workmen, are to be found in the Trade Union Act, 1878, with its amending Act of 1896. Practically, however, these relationships are determined by the Industrial Conciliation and Arbitration Act, and it is to the latter statute that attention must be paid if the relation of worker to employer is to be understood.

"The Conspiracy Law Amendment Act, 1894, permits any combination of persons in furtherance of a trade dispute, so long as it is not a combination for riot, sedition or crime. Later legislation, however, forbids such combination from attempting to evade or defeat an award of the Arbitration Court, or to promote a strike or lock-out.

"Holidays for workers in the different trades are regulated under awards of the Arbitration Court, but by statute are referred to in the Factories, Shops, and Offices, and other general Acts. Special enactments relate to the Alcoholic Liquors Sale Control Act Amendment Act, 1895, the Electoral Act, 1905, the Bank Holidays Act, 1902, and the Labour Day Act, 1899.

"One of the latest departures in 'advanced legislation' is the provision of land and dwellings for labour by means of the Workers' Dwellings Act, 1905, the Workers' Dwellings Act Amendment Act, 1905, the Amendment Act of 1906, and a section of the Land for Settlements Consolidation Act, 1900. The excessive rents which workmen have had to pay in the chief centres of the Colony needed reform in some protective way, and this method of attempting to achieve the object has been adopted.

"The Government Advances to Workers Act, 1906, enables a worker, manual or clerical, who is not in receipt of more than £200 per annum to borrow from the Government Advances to Settlers Office a sum not exceeding £350 for the purpose of erecting a dwelling for himself. The loan, with interest at the rate of five per cent. per annum (subject to a rebate of one-half per cent. if paid within fourteen days of due date), is repayable by seventy-three half-yearly instalments, or the borrower may from time to time reduce his liability by payment of five pounds, or a multiple of five pounds.

"The Scaffolding Inspection Act, 1906, provides for the appointment of inspectors, whose duties are to see that all scaffolding and gear used in connection therewith is constructed or rigged in accordance with regulations to be framed for the purpose. Any person intending to set up scaffolding must in

writing notify the inspector of such intention, subject to a penalty for non-compliance not exceeding twenty pounds. The inspector has power, if necessary, to order the owner or person in charge of scaffolding or gear to make such alterations to the same as may be required to render it safe. The penalty for failure to comply with such direction is a fine not exceeding twenty pounds. There is a right of appeal to the Minister against the decision of an inspector."

DEVELOPMENT OF NEW ZEALAND INDUSTRIES.

The following table shows the number of persons employed in the principal industries for the years ending 31st March 1895 and 1908, respectively, and indicates the progress made since the Industrial Conciliation and Arbitration Act came into operation in 1905:—

	1895.	1908.
Agricultural-implement making - -	355	835
Bread and confectionery manufacturing	1,380	3,686
Butter and cheese manufacturing - -	231	1,581
Brewing and malting - - - -	411	915
Boot manufacturing - - - -	2,568	3,168
Brick and pottery making - - - -	293	1,340
Cabinet-making and upholstering - -	718	2,623
Coachbuilding and blacksmithing - -	1,739	4,082
Cycle engineering - - - -	149	961
Dress and millinery making - - - -	2,563	6,182
Engineering and electrical engineering	1,240	4,387
Flax milling - - - -	262	3,541
Grain and seed dressing and wool dumping - - - -	78	288
Gas manufacturing - - - -	226	784
Laundry work - - - -	209	1,519
Meat preserving, bacon curing, tanning, currying, fellmongering, &c. - -	2,752	5,058
Plumbing, tinsmithing and gasfitting -	709	2,224
Printing and publishing - - - -	2,289	3,608
Photography - - - -	148	393
Paper milling, paper-bag and card- board-box making - - - -	138	275
Saddle and harness making - - - -	486	1,126
Soap, candle and tallow manufacturing	184	275
Sawmilling, joinery work, sash making and coopering - - - -	2,627	8,824
Tailoring and clothing manufacturing	3,214	7,064
Woollen milling - - - -	1,039	1,624
Watch and jewellery making - - - -	214	759

APPENDIX IV.

Notes on Sundry Commonwealth Acts affecting Trade and Industry.

(Compiled from Official sources.)

The Immigration Restriction Acts, 1901 and 1905, prohibit the immigration of any persons who are unable to comply with certain educational conditions. The effect of this Act is to exclude Asiatic and other coloured peoples from Australia. Immigration.

The Contract Immigrants Act, 1905, defines a contract immigrant as an immigrant to Australia under a contract or agreement to perform manual labour in Australia. The contract must be in writing and must be made by or on behalf of a resident in Australia. Its terms must be approved by the Minister of External Affairs before the admission of the immigrant. It must not be made in contemplation of, or with a view of affecting an industrial dispute. The Minister must be satisfied that there exists a difficulty of obtaining a worker of equal skill and ability in the Commonwealth, but this last provision does not apply to contract immigrants who are British subjects either born in the United Kingdom or descended from persons there born. The terms of the contract must offer to the immigrant advantages equal to those of local workers. Domestic servants and personal attendants accompanying their employers to Australia are excluded from the operation of the Act. Contract immigrants not complying with the above conditions are excluded from Australia.

The Excise Act, 1901, regulates excise generally, and deals with administration, producers, and dealers, licensing of manufacturers and regulation and supervision of factories, payment of duty and excise control, drawbacks, officers, disputes, prohibitions, and penalties. Excise.

The Customs Act, 1901, regulates the customs, and deals with the importation, exportation, and warehousing of goods, the administration and control of the customs, duties and drawbacks, ships' stores, the coasting trade, agents and officers, forfeitures and penalties, prosecutions and settlement of cases by the Minister. This is a machinery Act, and does not impose any duties. Customs Regulation.

The Commonwealth Conciliation and Arbitration Act, 1904, provides for the prevention of lock-outs and strikes in relation to industrial disputes. It constitutes a Commonwealth Court of Conciliation and Arbitration having jurisdiction for the prevention and settlement of industrial disputes, and for the exercise of the jurisdiction of the Court by conciliation, with a view to amicable agreement between employers and employé. In default of such amicable agreement, the Court is to exercise its jurisdiction by equitable award. States may refer industrial disputes to the Court, and the Court may call up cases under review by State industrial authorities, and may override such authorities. Its awards and orders are to prevail over theirs, and are to be binding on all parties to the dispute who appear or are represented before the Court, on Conciliation and Arbitration

all parties who have been properly summoned to appear, on all organisations and persons on whom the award is at any time declared by the Court to be binding, and on all members of organisations bound by the award. The organisation of representative bodies of employers and employes, and their submission of industrial disputes to the Court is facilitated and encouraged, such organisations being registered, and preference being given to their members where other things are equal. Provision is made for the enforcement of orders and awards, and for their registration in the principal registry and in the district registry, which may be inspected by any person on payment of a fee of sixpence.

Sea Carriage of Goods.

The Sea Carriage of Goods Act, 1904, to come into operation on 1st January 1905, declares to be null and void all clauses in bills of lading which relieve ship masters and owners from liability for loss or damage caused through negligence in loading or carelessness in stowage and custody of goods; or which lessen or destroy the obligations of shipowners to properly man the ship, make and keep her seaworthy, and make and keep all parts of the ship where goods are carried fit and safe for their reception and preservation; or which lessen or destroy the masters' and agents' obligations to carefully handle and stow, and to preserve and properly deliver, all goods. Clauses thus declared illegal are not in future to be inserted in bills of lading. In bills of lading, a clause that the ship is seaworthy and properly manned and equipped is to be implied; as also a clause whereby, if the ship is seaworthy and properly manned and equipped at the beginning of the voyage, owners and masters are not responsible for damage resulting from errors in navigation, perils of the sea, acts of God or the King's enemies, inherent defect of the goods, or their faulty packing, or their seizure under legal process, or for omission of owner of goods or agent, or saving or attempting to save life or property at sea.

Secret Commissions.

The Secret Commissions Act, 1905, applies to trade and commerce with other countries and among the States, and to agencies and contracts with the Commonwealth or any department or officer thereof. Under very heavy penalties, the following offences are defined:—Accepting by, or offering to, an agent, secret gifts as inducement or reward; giving an agent, or, being an agent, receiving and using, false documents or accounts, with intent to deceive the principal; being an agent, secretly buying from or selling to himself. Aiding and abetting offences under the Act, are declared to be punishable as the offence itself. The principal may recover the amount of secret gift.

Trade Descriptions.

The Commerce (Trade Descriptions) Act, 1905, relates to commerce with other countries, and is incorporated with the Customs Act, 1901. Customs officers may enter any ship, wharf, or other place, and inspect imports and exports, and take samples of them, for the purposes of the Act. Imports and exports of articles used for food or drink, or in the preparation thereof; medicines, manures, apparel (including boots and shoes), jewellery, and seeds and plants, not bearing the prescribed trade description, may be prohibited under the regulations. Importation and exportation of falsely-marked goods are forbidden.

Prevention of Dumping.

The Australian Industries Preservation Act, 1906, deals with the repression of monopolies and the prevention of "dumping." Monopolies are defined as combinations existing with intent to

restrain trade or commerce to the detriment of the public, or with intent to destroy or injure by means of unfair competition any Australian industry. The penalty is a fine of £500. Unfair competition is deemed to be competition that would probably, or does in fact, result in an inadequate remuneration for labour in the Australian industry, or in creating substantial disorganisation by throwing workers out of employment, also the giving of rewards, rebates, refunds, discounts, upon condition of dealing with certain corporations. In determining whether competition is unfair, regard shall be had to the management, processes, plant, and machinery employed in the Australian industry affected by the competition being reasonably efficient and up-to-date. Any person or corporation who monopolises, or attempts to monopolise, or combines or conspires with any other person to monopolise any part of the trade with other countries or among the States with intent to control to the detriment of the public the supply or price of any service, merchandise or commodity, is guilty of an offence for which a penalty of £500 may be exacted. With regard to "dumping," if the Comptroller-General of Customs is of opinion that imported goods have been purchased abroad at prices greatly below their ordinary cost of production, and for the purpose of destroying or injuring any Australian industry, he shall certify to the Minister accordingly, giving full particulars. On receipt of the certificate, the Minister may, by order in writing, refer to a Judge of the High Court the investigation and determination of the question whether the goods are being imported with the intent alleged, and if so whether the importation of the goods should be prohibited either absolutely or subject to any specified conditions, restrictions, or limitations. The determination of the Judge is to be final and without appeal. In all cases of prohibition the determination of the Judge must be laid before Parliament within seven days after publication in the *Gazette*.

The first case under this Act was heard a few months ago at Melbourne, when a local shipping firm was indicted for refusing to answer certain questions bearing on the existence of an alleged shipping ring. A fine of £5 was imposed.

APPENDIX V.

Patents, Copyrights, Trade Marks, and Designs, in the Commonwealth.

(Extract from the *Commonwealth Year Book*, 1907.)

Prior to the establishment of Federation, and for a few years thereafter, each Australian State possessed independent jurisdiction in respect of patents, copyrights, trade marks, and designs, and had in nearly all cases enacted its own laws governing them. Any person, therefore, who desired to protect a patent, copyright, trade mark, or design had necessarily to incur the trouble and expense of making six separate applications—one in each State.

Devolution of
Jurisdiction upon
the Common-
wealth.

The Commonwealth Constitution Act conferred upon the Federal Parliament power to legislate respecting these matters.

The State Acts, though in general based upon the Imperial Statutes dealing with these subjects, were not wholly governed by them. The Commonwealth Acts, both in regard to principle and practice, have the same general foundation, but in some respects have been modified and brought into line with the totality of Australian experience.

PATENTS.

The first Commonwealth Patents Act was passed in 1903, and was amended in 1906. Under these Acts, which are administered by a "Commissioner of Patents," the power of the States to grant patents was abolished, and their functions in that respect were transferred to the Commonwealth. A single Commonwealth patent now gives throughout the Commonwealth that protection which formerly could only be obtained by procuring a patent in each State. The rights of State patentees are in all cases reserved to them. A holder of a State patent in force may obtain, for a period not exceeding the unexpired time thereof, a Commonwealth patent for the invention comprised in the State patent. Any State may, however, be excepted from the patent if the Commissioner of Patents is satisfied that the invention either (a) is not novel, (b) has been made the subject of a pending application, or (c) has been published in such State. Comparatively small fees, totalling £8, are now sufficient to obtain for an inventor protection throughout the Commonwealth, and the only renewal fee (£5) is payable before the expiration of the seventh year of the patent.

Applications for Patents.

Any of the following persons may make application for a patent:—(a) The actual inventor. (b) His assignee, agent, attorney, or nominee. (c) The actual inventor or his nominee jointly with the assignee of a part interest in the invention. (d) The legal representative of a deceased actual inventor or of his assignee. (e) Any person to whom the invention has been communicated by the actual inventor, his legal representative or assignee (if the actual inventor, his legal representative or assignee is not resident in the Commonwealth). An application for a patent must be for one invention only, and must be made in the form prescribed, and lodged by being left at or sent by post to the Patent Office at Melbourne. It must be accompanied by either a provisional or a complete specification. The application must contain a declaration in the prescribed form setting out the facts relied on to support the application, and must be signed by the applicant and attested by a witness.

Term for which Granted.

The term for the duration of every patent is limited to fourteen years from the date of application. A patent ceases if the patentee fails to pay the renewal fee within the prescribed time. If in any case, however, by accident, mistake, or inadvertence a patentee fails to pay the renewal fee within the prescribed time, he may, on application to the Commissioner and on payment of the prescribed fees, obtain an extension of the time for not more than one year.

Opposition to Grant of Patent.

Within three months of the advertisement of the acceptance of a complete specification any person may give notice at the Patent Office of opposition to the grant on any of the following grounds:—(a) That the applicant has obtained the invention from the

opponent. (b) That the invention has not been communicated to the applicant by the actual inventor (if the actual inventor is not resident within the Commonwealth). (c) That the invention has already been patented in the Commonwealth. (d) That the complete specification describes an invention other than that described in the provisional specification, and that the opponent has applied for a patent for such other invention in the interval between the leaving of the provisional and complete specifications. (e) Want of novelty. (f) Prior publication.

The case is heard and decided by the Commissioner, from whose decision an appeal lies to the High Court or the Supreme Court.

An important feature of the Patents Act of 1903 was that special provisions were made for granting patents to a patentee in respect of any improvement on his invention. Such patents are called "additional patents," and are granted for the unexpired term of the original patent, the amount of the fee for an additional patent being half that for an ordinary patent.

Additional
Patents and
Amendments

Amendments to specifications by way of disclaimer, correction, or explanation may be allowed on request to the Commissioner, provided that the specification, if amended as requested, does not claim an invention substantially larger than or different from the original invention. Any person may oppose an amendment on giving notice of opposition at the Patent Office.

Revocation of a patent may be obtained by petition to the High Court or the Supreme Court of a State. A petition must be presented by either (a) the Attorney-General or person authorised by him, (b) any person alleging that he was the actual inventor or that the patent was obtained from him by fraud, or (c) by any person alleging that he had publicly used, made, or sold within the Commonwealth before the date of the patent anything claimed by the patentee as his invention.

Revocations of
Patents and com-
pulsory Licences.

A compulsory licence to work a patent in the Commonwealth, or a petition for revocation of a patent, may be granted upon proof by any person interested that the reasonable requirements of the public with respect to the invention have not been satisfied. The Act also contains provisions regarding the remedies for infringement of patents.

The Patents Act of 1903 contained provisions under which the international arrangements for the protection of patents contained in the Imperial Acts could be made applicable to the Commonwealth by order of the King-in-Council. The necessary proclamation was issued by the Imperial Government as regards England and Australia on the 1st February, 1907, and as regards all other countries in the International Convention on the 5th August, 1907. British and foreign inventors are now, therefore, if they apply in Australia within twelve months of their original application, entitled to receive a patent for their inventions in priority to other applicants, and such patent has the same date as the date of the application abroad. Corresponding arrangements have also been made by the Commonwealth and New Zealand.

International
Protection of
Patents.

COPYRIGHT.

Prior to the establishment of Federation the copyright legislation enacted by all the States except Tasmania was based upon and closely followed the English law of copyright, differing,

however, in some cases therefrom as to the periods for which a copyright was granted. Only local publications were affected by it. A Colonial law did not affect the rights of authors and artists where copyrights were acquired outside the Colony. The Imperial statutes governed copyright in those Colonies which had not passed a local copyright law.

Copyright Acts.

The first Commonwealth Act was passed in 1905. It follows English legislation even more closely than the State Acts. It deals with literary, musical, dramatic, and artistic copyrights and applies only to Australian publications. It may be applied to foreign publications by registration of them under it.

Principal Feature.

The principal feature of the Australian Act is that it provides the same term of copyright and performing right for all publications under the above heads, namely, the life of the author and seven years thereafter, or forty-two years from publication, whichever be the longer. Every book published in Australia for which copyright is claimed must be printed from type set up or from plates or negatives made in Australia. With respect to lectures, it is provided that the author shall be the first owner of the lecturing right, and that he may prevent publication of a report of the lecture by giving notice at the beginning of the lecture, or by a conspicuous written notice on the entrance door or in the lecture room stating that reporting is prohibited. The author of an article first published in a periodical to which it was contributed for valuable consideration retains the copyright in the article, but may not republish it until one year after the end of the year in which it was first published. The owner of the copyright in a book may be compelled to translate it, or to permit translation, if it be not translated within ten years of publication. The person ordering a photograph for which consideration is paid is the owner of the copyright in it.

Registration.

Registration is a necessary preliminary to an action for infringement, but copyright exists independently of registration. The Commissioner of Patents has been appointed "Registrar of Copyrights."

Proceedings for the rectification of the register may be taken before the Supreme Court of any State.

In the matters of copyright the Commonwealth possesses the privileges conferred upon each signatory of the Berne Convention.

TRADE MARKS.

The remarks made concerning the unification of the patent system of the Commonwealth apply equally to trade marks. Under the Trade Marks Act, 1905, which came into force on the 2nd July 1906, the Commissioner of Patents is appointed to act also as "Registrar of Trade Marks." There are two trade marks, viz., the "Workers' Trade Mark" and the "Commonwealth Trade Mark," which call for the special references to be found in the section herein dealing with "Industrial Legislation," *see* p. 70.

Essential Particulars of Trade Marks.

A registrable trade mark must consist of essential particulars with or without additional matter. The essential particulars must be one or more of the following:—(a) A name or trading style of a person printed, impressed, or woven, in some particular and distinctive manner; (b) a written signature of the person applying

for registration thereof or of some predecessor in his business; (c) a distinctive device, mark, brand, heading, label, or ticket; (d) one or more invented words; (e) a word or words having no reference to the character or quality of the goods, and not being a geographical name used or likely to be understood in a geographical sense. The additional matter which may be added must be either (a) any letters, words, or figures; or (b) any combination of letters, words, or figures or any of them.

State registrations cease to be in force at the expiration of fourteen years from the date of the Commonwealth Act, if the registration has not previously expired. Commonwealth registration of a State-registered mark may be effected, and the fact of its registration in a State prior to the coming into force of the Commonwealth Act, may entitle the registered proprietor in the State to Commonwealth registration, notwithstanding the existence of defects which might be ground for refusal of an original application for Commonwealth registration.

State Registrations.

The registration of a trade mark is for a period of fourteen years, but may be renewed from time to time. International and intercolonial arrangements for the protection of trade marks may be made in a manner similar to that provided for the protection of patents. Registration may be opposed by any person lodging a notice of opposition at the Trade Marks Office within three months after the advertisement of the application. During the year 1906 there were 3,373 applications for registration of marks received at the Trade Marks Office. The total fees received amounted to £3,476.

Duration of Registration and General Provisions.

DESIGNS.

The Designs Act of 1906 came into operation on the 1st January, 1907. Under this Act a Commonwealth Designs Office has been established and the Commissioner of Patents appointed "Registrar of Designs."

Any new and original design which has not been published in Australia before the lodging of an application for its registration may be registered in respect of all or any of the articles enumerated in the classification contained in the regulations, which comprise jewellery, paperhangings, carpets, floor-cloths, lace, hosiery, millinery, wearing apparel, textile fabrics, book-binding, and articles composed wholly or chiefly of a variety of solid substances. After an application for the registration of a design has been lodged the design may be published and used without prejudice to the validity of the registration.

Registration.

The registration takes effect as from the date of the lodging of the application, and, subject to the provisions of the Act, remains in force for a period of five years from that date. The owner of a registered design must, within two years after registration, use the design in Australia, and if he fails to do so the copyright ceases. If, however, such design is used in any manufacture abroad the above period is limited to six months.

Duration of Copyright in Designs.

The Act also contains provisions regarding the remedies for infringement of designs, the rectification of the register, and for making arrangements for the international and intercolonial protection of copyright in designs.

General.

APPENDIX VI.

WAGES AND COST OF LIVING IN AUSTRALASIA.

Approximate Average Wages paid in Australia
in 1907.

(This List, which is reprinted from "Australia To-day," shows the actual wages paid in Victoria, but, with slight variations, indicates the minimum wages prevailing throughout the Commonwealth.)

Trades for which Special Wages Boards are appointed :—

Class of Trade.	Minimum Wage.
Aërated water - - - - -	39s. 2d. for males.
Artificial manure - - - - -	39s. 3d. "
Bedsteads and fenders - - - - -	44s. 1d. "
Bookbinding - - - - -	57s. 9d. "
Boot " - - - - -	18s. 3d. for females.
" - - - - -	47s. 7d. for males.
" - - - - -	21s. 2d. for females.
Brassworkers - - - - -	51s. 4d. for males.
Bread - - - - -	53s. 3d. "
Breweries - - - - -	48s. 0d. "
Brick - - - - -	45s. 8d. "
Brushes and brooms - - - - -	50s. 0d. "
Butchers - - - - -	49s. 7d. "
Cigar - - - - -	45s. 7d. "
" - - - - -	33s. 4d. for females.
Clothing - - - - -	54s. 1d. for males.
" - - - - -	22s. 4d. for females.
Confectionery - - - - -	50s. 7d. for males.
" - - - - -	17s. 0d. for females.
Coopers - - - - -	56s. 6d. for males.
Dresses, mantles, &c. - - - - -	47s. 4d. "
" " - - - - -	21s. 4d. for females.
Engraving - - - - -	65s. 5d. for males.
Fellmongers - - - - -	38s. 10d. "
Furniture (European workers) - - - - -	52s. 11d. "
" (Chinese) - - - - -	51s. 7d. "
" (bedding) - - - - -	48s. 3d. "
" - - - - -	21s. 9d. for females.
" (wire mattress) - - - - -	51s. 5d. for males.
" - - - - -	32s. 0d. for females.
" (wood mantelpieces, &c.) - - - - -	53s. 5d. for males.
Iron moulders - - - - -	50s. 0d. "
Jams, pickles, and sauces - - - - -	36s. 2d. "
" " " - - - - -	15s. 10d. for females.
Jewellery - - - - -	60s. 11d. for males.
" - - - - -	38s. 2d. for females.
Leather goods - - - - -	47s. 5d. for males.
" " - - - - -	19s. 9d. for females.
Malting - - - - -	48s. 1d. for males.
Millet brooms - - - - -	46s. 0d. "
Ovens, stoves, &c. - - - - -	45s. 6d. "

Class of Trade.	Minimum Wage.
Pastry - - - - -	54s. 2d. for males.
Plate glass - - - - -	48s. 4d. "
Pottery - - - - -	45s. 1d. "
Printing - - - - -	59s. 9d. "
Saddlery - - - - -	50s. 1d. "
Shirt - - - - -	54s. 7d. "
" - - - - -	19s. 11d. for females.
Stone cutters - - - - -	51s. 8d. for males.
Tanning - - - - -	42s. 0d. "
Tinsmiths - - - - -	45s. 7d. "
Underclothing - - - - -	41s. 10d. "
" - - - - -	19s. 8d. for females.
Wicker - - - - -	48s. 11d. for males.
Wood workers - - - - -	50s. 11d. "
Woollen trade - - - - -	39s. 8d. "
" " - - - - -	20s. 11d. for females.

Trades for which Special Wages Boards had not been appointed:—

Class of Trade.	Wages for Operatives over 21 Years.
Agricultural implements - - - - -	41s. 10d. for males.
Ammunition and safety fuse - - - - -	53s. 10d. "
" " - - - - -	16s. 8d. for females.
Artificial flowers " - - - - -	30s. 0d. for males.
" " - - - - -	15s. 0d. for females.
Asbestos - - - - -	35s. 1d. for males.
Bacon - - - - -	44s. 1d. "
Bags (gunny) - - - - -	25s. 11d. "
" " - - - - -	17s. 8d. for females.
Bark mills - - - - -	37s. 0d. for males.
Bellows making - - - - -	38s. 6d. "
Biscuits - - - - -	38s. 11d. "
" - - - - -	15s. 6d. for females.
Blinds (Venetian, &c.) - - - - -	41s. 1d. for males.
Butter and milk Pasteurising - - - - -	36s. 7d. "
Candles - - - - -	35s. 8d. "
Cardboard boxes - - - - -	43s. 5d. "
" " - - - - -	17s. 1d. for females.
Carpets, curtains, cushions - - - - -	20s. 11d. "
Carriages, waggons, and drays - - - - -	44s. 2d. for males.
Cement - - - - -	40s. 7d. "
Chaffcutting and compressed fodder - - - - -	34s. 10d. "
Chemicals - - - - -	42s. 4d. "
" - - - - -	17s. 2d. for females.
Cork cutting - - - - -	38s. 9d. for males.
Corsets - - - - -	22s. 3d. for females.
Cutlery - - - - -	50s. 11d. for males.
Cycles - - - - -	39s. 0d. "
Distillers - - - - -	48s. 4d. "
Dye works - - - - -	38s. 7d. "
" - - - - -	16s. 2d. for females.
Electric light batteries, &c. - - - - -	47s. 9d. for males.
Electro-plating watches, &c. - - - - -	41s. 11d. "
Eucalyptus oil - - - - -	40s. 0d. "
Farriers - - - - -	42s. 1d. "
Firewood - - - - -	35s. 10d. "

	Class of Trade.	Wages for Operatives over 21 Years.
Flock mills -	- - - - -	42s. 8d. for males.
"	- - - - -	16s. od. for females.
Florists -	- - - - -	25s. 4d. "
Flour mills -	- - - - -	45s. 3d. for males.
Furriers -	- - - - -	45s. 10d. "
"	- - - - -	22s. 5d. for females.
General engineering -	- - - - -	47s. 5d. for males.
Glass bottles -	- - - - -	43s. 8d. "
Grocers' sundries, maizena, spices, &c. -	- - - - -	40s. 1d. "
"	- - - - -	15s. 11d. for females.
Hair carding " - " - " -	- - - - -	37s. 11d. for males.
Hats -	- - - - -	58s. 9d. "
"	- - - - -	19s. 10d. for females.
Heel lifts and boot laces -	- - - - -	47s. 6d. for males.
Hosiery -	- - - - -	19s. 5d. for females.
Ink -	- - - - -	41s. 3d. for males.
Laundries (Chinese) -	- - - - -	25s. 4d. "
" (European) -	- - - - -	37s. 4d. "
"	- - - - -	18s. 11d. for females.
Lead and shot works -	- - - - -	42s. 4d. for males.
Leather belt (machine) -	- - - - -	42s. 8d. "
Lenses (glass) -	- - - - -	47s. 9d. "
Marine stores -	- - - - -	29s. 3d. "
Matches and fire kindlers -	- - - - -	35s. 5d. "
"	- - - - -	16s. 11d. for females.
Mats, rugs, &c. - " -	- - - - -	21s. 7d. for males.
Metallurgical works -	- - - - -	35s. 5d. "
Millinery -	- - - - -	21s. 4d. for females.
Modelling -	- - - - -	47s. 8d. for males.
Nails -	- - - - -	41s. 6d. "
Organs and musical instruments -	- - - - -	53s. od. "
Paints and varnish -	- - - - -	40s. 2d. "
Paper bags -	- - - - -	33s. 8d. "
"	- - - - -	14s. 11d. for females.
Paper patterns -	- - - - -	50s. 2d. for males.
"	- - - - -	25s. 11d. for females.
Photography -	- - - - -	44s. 11d. for males.
Picture frames -	- - - - -	39s. 7d. "
Plumbers -	- - - - -	45s. 2d. "
Pneumatic tyres and rubber goods -	- - - - -	34s. 8d. "
"	- - - - -	17s. 6d. for females.
Preserving meats " " -	- - - - -	44s. 7d. for males.
Refrigerating and ice -	- - - - -	45s. 9d. "
Rope, twine, &c. -	- - - - -	36s. 6d. "
"	- - - - -	14s. 7d. for females.
Sausage skins -	- - - - -	40s. 5d. for males.
Signwriting -	- - - - -	65s. od. "
Skin packing -	- - - - -	38s. 1d. "
Soap and soda -	- - - - -	36s. 1d. "
Starch -	- - - - -	33s. 10d. "
"	- - - - -	15s. 3d. for females.
Stationery -	- - - - -	49s. 4d. for males.
"	- - - - -	15s. 11d. for females.
Stone crushing by machinery -	- - - - -	43s. 8d. for males.
Sugar refining -	- - - - -	44s. 5d. "
Tea packing -	- - - - -	32s. 9d. "

Class of Trade.	Wages for Operatives over 21 Years.
Tea packing - - - - -	18s. 6d. for females.
Tents, nets, and flags - - - - -	43s. 10d. for males.
Ties " " - - - - -	20s. 6d. for females.
Tinsmiths (food tins) - - - - -	17s. 3d. "
" " - - - - -	35s. 10d. for males.
Tobacco and cigarettes - - - - -	14s. 7d. for females.
" " - - - - -	41s. 6d. for males.
Toys " " - - - - -	24s. 7d. for females.
" " - - - - -	31s. 7d. for males.
Umbrellas - - - - -	11s. 4d. for females.
" " - - - - -	44s. 9d. for males.
Vinegar - - - - -	19s. 10d. for females.
Waterproof clothing - - - - -	39s. 10d. for males.
" " - - - - -	43s. 4d. "
Wire works - - - - -	20s. 0d. for females.
Wood patterns - - - - -	38s. 3d. for males.
	55s. 9d. "

Average Wages paid in Wellington, New Zealand, during 1907.

(Compiled from Official Sources.)

I.—AGRICULTURAL LABOUR.

Farm labourers :

With board, per week - - - - -	20s. to 25s.
Without board, per day - - - - -	

Ploughmen :

With board, per week - - - - -	25s. to 30s.
Without board, per day - - - - -	

Harvesters :

With board, per week - - - - -	25s. to 30s.
Without board, per day - - - - -	1s. to 1s. 3d. p. hr.

Men cooks on farms, with board, per week - 20s. to 30s.

Female farm servants, with board, per week - 15s. to 25s.

II.—PASTORAL LABOUR.

Shepherds, with board, per annum - - £60 to £80.

Stock-keepers, with board, per annum - £65 to £80.

Station labourers :

With board, per week - - - - -	20s. to 25s.
Without board, per day - - - - -	

Shearers, with board, per 100 sheep shorn - 17s. 6d. to 22s. 6d.

Men cooks on stations, with board, per week - 25s. to 30s.

III.—ARTISAN LABOUR (per day, without board).

Masons - - - - -	12s.
Plasterers - - - - -	12s. to 14s.
Bricklayers - - - - -	12s. to 12s. 8d.
Carpenters - - - - -	10s. to 12s.
Smiths - - - - -	10s.
Shipwrights - - - - -	11s. 8d.
Plumbers - - - - -	10s. to 12s.
Painters - - - - -	9s. 4d. to 10s.
Saddlers - - - - -	8s. to 10s.

Shoemakers	-	-	-	-	-	-	8s. to 10s.
Coopers	-	-	-	-	-	-	10s. to 11s.
Watchmakers	-	-	-	-	-	-	10s. to 12s.
Wheelwrights	-	-	-	-	-	-	10s. to 11s. 8d.

IV.—SERVANTS.

Married couples without family, with board, per annum	-	-	-	-	-	£75 to £100.
Married couples with family, with board, per annum	-	-	-	-	-	£75 to £90.
Grooms, with board, per week	-	-	-	-	-	20s. to 30s.
Gardeners :						
With board, per week	-	-	-	-	-	20s. to 25s.
Without board, per day	-	-	-	-	-	7s. to 9s.
Cooks, with board, per week	-	-	-	-	-	20s. to 30s.
Laundresses, with board, per week	-	-	-	-	-	17s. 6d. to 25s.
General house-servants, with board, per week	-	-	-	-	-	12s. to 15s.
Housemaids, with board, per week	-	-	-	-	-	12s. 6d. to 17s. 6d.
Nursemaids, with board, per week	-	-	-	-	-	7s. 6d. to 12s.
Needlewomen :						
With board, per week	-	-	-	-	-	15s. to 20s.
Without board, per day (lunch always provided)	-	-	-	-	-	4s. to 5s.

V.—MISCELLANEOUS.

General labourers, without board, per day	-	-	-	-	-	7s. to 9s.
Stonebreakers, without board, per cubic yard	-	-	-	-	-	3s. 6d.
Seamen, with board, per month	-	-	-	-	-	£6 10s. to £7.
Miners, without board, per day	-	-	-	-	-	9s. 4d. to 10s.
Engine-drivers, without board, per day	-	-	-	-	-	10s.
Tailors,	"	"	"	"	"	9s. to 11s.
Tailoresses,	"	"	"	"	"	25s. to 40s.
Dressmakers,	"	"	"	"	"	20s. to 40s.
Milliners,	"	"	"	"	"	25s. to 35s.
Machinists,	"	"	"	"	"	20s. to 30s.
Storekeepers,	"	"	"	"	"	40s. to 60s.
Storekeepers' assistants,	"	"	"	"	"	30s. to 50s.
Drapers' assistants,	"	"	"	"	"	30s. to 60s.
Grocers' assistants,	"	"	"	"	"	30s. to 60s.
Butchers,	"	"	"	"	"	45s. to 60s.
Bakers,	"	"	"	"	"	45s. to 60s.
Storemen,	"	"	"	"	"	45s. to 50s.
Compositors,	"	"	"	"	"	45s. to 60s.
Sawmill hands,	"	"	"	"	"	54s. to 60s.
Flaxmill hands,	"	"	"	"	"	54s.

Approximate Average Prices of Foodstuffs and
Domestic Supplies in Australia in 1907.

Bread, per 2-lb. loaf	-	-	-	-	-	2½d.
Butter, factory, per lb.	-	-	-	-	-	1s. 2d.
Jam, first grade, per tin	-	-	-	-	-	3½d.
Flour, 25 lbs.	-	-	-	-	-	2s. 3d.
Oatmeal, 7 lbs.	-	-	-	-	-	1s. 2d.
Eggs, per dozen	-	-	-	-	-	9½d.
Tea, average per lb.	-	-	-	-	-	1s. 3d.
Coffee, first grade, per lb.	-	-	-	-	-	1s. 8d.
Sugar, per lb.	-	-	-	-	-	2½d.
Bacon, per lb.	-	-	-	-	-	11d.

Soap, first grade, per lb.	-	-	-	-	-	8d.
Sago, per lb.	-	-	-	-	-	3½d.
Candles, per lb.	-	-	-	-	-	8½d.
Milk, per quart	-	-	-	-	-	4d.
Coal, per 5 cwt.	-	-	-	-	-	6s.
Beef, rump steak, per lb.	-	-	-	-	-	8d.
Corned beef, round, per lb.	-	-	-	-	-	4½d.
Mutton, hindquarter, per lb.	-	-	-	-	-	4d.
Pork, per lb.	-	-	-	-	-	6d.
Sausages, beef, per lb.	-	-	-	-	-	4d.
Tripe, per lb.	-	-	-	-	-	4½d.
Potatoes, per 14 lbs.	-	-	-	-	-	1s. 2d.
Onions, per lb.	-	-	-	-	-	1½d.

Average Retail Prices of Foodstuffs and Domestic Supplies in Wellington, New Zealand, during 1907.

(Compiled from Official Statistics.)

Flour, per bag of 50 lbs.	-	-	-	-	6s. 6d. to 7s. 6d.
Bread, per 4 lb. loaf	-	-	-	-	7d. to 8d.
Butchers' meat :					
Beef, per lb.	-	-	-	-	5d. to 6d.
Mutton, per lb.	-	-	-	-	4d. to 5½d.
Veal, per lb.	-	-	-	-	4½d. to 6d.
Pork, per lb.	-	-	-	-	6d. to 7d.
Lamb, per lb.	-	-	-	-	6d. to 8d.
Butter :					
Factory-made, per lb.	-	-	-	-	1s. to 1s. 2d.
Fresh, dairy-made, per lb.	-	-	-	-	10d.
Salt	-	-	-	-	8d. to 10d.
Cheese :					
Colonial, per lb.	-	-	-	-	8d. to 9d.
Imported, per lb.	-	-	-	-	2s.
Milk, per quart	-	-	-	-	3d. to 4d.
Geese, per pair	-	-	-	-	7s. to 10s.
Ducks, per pair	-	-	-	-	5s. to 6s.
Fowls, per pair	-	-	-	-	2s. 6d. to 5s.
Turkeys, per head	-	-	-	-	5s. to 10s.
Bacon, per lb.	-	-	-	-	7d. to 10d.
Ham, per lb.	-	-	-	-	8½d. to 11d.
Eggs, per dozen	-	-	-	-	1s. to 1s. 3d.
Potatoes, retail, per cwt.	-	-	-	-	10s. to 12s.
Onions, per lb.	-	-	-	-	1d. to 2d.
Carrots, per dozen bunches	-	-	-	-	1s. to 2s.
Turnips, per dozen bunches	-	-	-	-	1s. to 2s.
Cabbages, per dozen	-	-	-	-	2s. to 3s.
Tea, per lb.	-	-	-	-	1s. 6d. to 2s.
Coffee, per lb.	-	-	-	-	1s. 6d. to 1s. 10d.
Sugar, per lb.	-	-	-	-	2d. to 2½d.
Rice, per lb.	-	-	-	-	2d. to 3d.
Salt, per lb.	-	-	-	-	1d.
Soap, per cwt.	-	-	-	-	17s. 6d. to £1 7s.
Candles, per lb.	-	-	-	-	6½d. to 8d.
Tobacco, per lb.	-	-	-	-	5s. to 6s.
Coal, per ton	-	-	-	-	£1 16s. to £2 5s.

APPENDIX VII.

Notes on the Tariffs of Australia and New Zealand.

THE AUSTRALIAN TARIFF.

Indices and
Notes.

Indices and explanatory notes relating to the following items of trade may be consulted at the offices of the Manufacturers' Association of Great Britain, Queen Anne's Chambers, Westminster :—

Tools of trade for artisans and mechanics, and tools in general use which may be admitted free under a Customs' byelaw.

Machines, machine tools and parts thereof as enumerated which may be admitted free of duty under a Customs' byelaw.

Minor articles for the manufacture of goods within the Commonwealth which may be admitted free of duty under a Customs' byelaw.

Definitions of items 160, 162, and 176, including motive-power machinery and appliances, machines and machinery, n.e.i., and mining-machinery, &c.

Any article, not otherwise dutiable, composed of a combination of other articles, some of which are dutiable when imported separately, and of others free of duty when imported separately, are dealt with as follows :—

- (a) When the value of the dutiable portion exceeds the value of the free portion, duty shall be charged upon the whole article at the same rate as would be chargeable on that portion of the dutiable portion which, if imported separately, would be liable to the highest rate of duty.
- (b) When the value of the free portion exceeds the value of the dutiable portion of such article, the whole article shall be admitted free of duty.

Complete copies of the Tariff may be obtained from the Manufacturers' Association.

Requirements of
Customs Department.

The following requirements of the Australian Commonwealth Customs Department should be carefully noted by manufacturers and exporters :—

“ The Preferential Tariff on goods the produce or manufacture of the United Kingdom shall not be recognised as applying to any goods imported, unless on importation into the Commonwealth and entry of the goods, the importer shall produce to the proper officer of Customs at the option of the latter—

- “(1) A certificate by the suppliers or manufacturers, as the case may be, on the form hereunder set out and marked “ A ” ; and or

- "(2) Such other or further evidence as the Officer of Customs may require, proving that the goods are the *bonâ fide* produce or manufacture of the United Kingdom; or
- "(3) A duly attested statutory declaration that the goods described in the invoice of the goods shown in entry presented are the produce or manufacture of the United Kingdom; or
- "(4) A certificate to the same effect under the Seal of a British Chamber of Commerce or the Manufacturers' Association of Great Britain.

"The certificate hereunder set out marked "A" or the certificate mentioned on para. 4 shall be written, printed, or stamped on the invoice, or attached thereto.

"If the certificate is not written, printed, or stamped on the invoice, such particulars of the goods must be shown on such certificate as will satisfy the Officer of Customs that the certificate and invoice refer to the same goods.

"If a statutory declaration (as in para. 3) is furnished, it shall be attached to the invoice."

"Postal Packages."

"In the case of postal packages not exceeding £10 in value, if the contents of such packages are not merchandise for sale, a certificate in the form hereunder set out and marked "B" will be accepted if signed in the presence of a postal officer of the British Post Office at which the package is posted."

FORM "A."

FORM OF CERTIFICATE TO BE PRODUCED WITH ENTRY AND INVOICES OF ANY IMPORTED GOODS CLAIMED TO BE ENTERED UNDER THE PREFERENTIAL TARIFF AS BEING THE PRODUCE OR MANUFACTURE OF THE UNITED KINGDOM.

Certificates of Origin.

I, _____ (manufacturer)
_____ (the supplier)

of the articles included in this invoice, have the means of knowing, and do hereby certify that the said invoice from myself to _____ and amounting to _____

is true and correct; and that all the articles included in the said invoice are *bonâ fide* the produce or manufacture of the United Kingdom, and that a substantial portion of the labour of that country has entered into the production of every manufactured article included in the said invoice to the extent in each article of not less than one-fourth of the value of every such article in its present condition ready for export to the Commonwealth of Australia.

Signature— .

Witness— .

Dated at _____ this _____ day of _____
190 .

When this certificate is signed by some person on behalf of a manufacturer or supplier, such person must state that he is duly authorised to do so.

FORM "B."

CERTIFICATES TO BE INDORSED ON POSTAL PACKAGES NOT EXCEEDING £10 IN VALUE, THE CONTENTS OF WHICH ARE NOT MERCHANDISE FOR SALE.

The contents of this package are not merchandise for sale, and every article herein to the extent of at least one-fourth of its present value is *bonâ fide* the produce or manufacture of the United Kingdom.

Dated at

190 .

Sender.

In the presence of

Postal Officer.

Duty on Advertising Matter.

1. British manufacturers should take particular note of the Australian Commonwealth Customs regulations regarding the transmission of advertising matter. The following is an official explanation:—

Tariff Item 356 (A). Paper: Manufactures of, framed (including the weight of the frame—or unframed having advertisements thereon, including price-lists n.e.i., trade catalogues n.e.i., show cards n.e.i., and all printed, photographed, or lithographed matter, pictures n.e.i., and posters of all kinds, used or intended to be used for advertising purposes; also all printed bags and cartoons; calendars and almanacs n.e.i.)

is dutiable at 6d. per lb., or 35 per cent. ad. val., whichever rate returns the higher duty. It will be found, however, that, with very rare exceptions, the duty may be properly assessed at the specific rate of 6d. per lb. on such matter imported through the post.

2. Under Item 356 (C), Australian directories, guides, and time-tables are dutiable at 6d. per lb.

3. A special exemption has been made in respect of all printed matter and photographs the property of any public institution and intended for deposit or exhibition therein, and these are admitted free.—Item 356 (B).

4. The rates mentioned in paragraphs 1 and 2 apply to all the advertising matter mentioned in these paragraphs introduced through the post, and even when forwarded in single copies addressed to individuals, except in cases coming under paragraph 6.

5. The duty may be paid by any of the methods specified hereunder:—

(a) The total weight of any one mail may be taken by a consignor and the duty payable as mentioned in paragraphs 1 and 2 may be remitted in one sum to the Deputy Postmaster-General of the State to which the advertising matter is addressed.

(b) The duty may be paid on the same basis as in (a) by the consignor's agents in the Commonwealth.

- (c) Duty stamps may be affixed to each package covering the amount of duty payable on same. These stamps may be purchased in denominations of 1d., 3d., and 1s. from the Offices of the Commonwealth of Australia, 72, Victoria Street, London, and must be cancelled before despatch.
- (d) If neither of the above methods be followed the duty is to be collected upon the packets containing the goods mentioned in paragraphs 1 and 2, according to the following scale :—

Duty.	Duty calculated at 6d. per lb.
1d.	Up to and including $3\frac{3}{4}$ oz.
2d.	Over $3\frac{3}{4}$ oz. and not exceeding $6\frac{1}{4}$ oz.
3d.	Over $6\frac{1}{4}$ oz. and not exceeding 9 oz.
4d.	Over 9 oz. and not exceeding 12 oz.
5d.	Over 12 oz. and not exceeding $14\frac{1}{2}$ oz.
6d.	Over $14\frac{1}{2}$ oz. and not exceeding 16 oz.

6. In cases where the total duty on any one mail addressed by any one consignor to any one State of the Commonwealth does not exceed 1s., the payment of duty is waived.

As it has been found that the Imperial Postal Regulations do not allow any postal packet to contain any other addressed to a different person at a different address, the Commonwealth Customs Department has approved of the following arrangements :—

- (a) That the use of Commonwealth Duty stamps issued from the London Office be limited to packets sent to single addresses.
- (b) That such Duty stamps be not allowed for use in connection with the despatch of circulars, &c., packed together.

Where it is desired to take advantage of the saving on fractions in duty the amount payable on the total weight of any one mail addressed to individuals in any one State may be remitted to the Deputy Postmaster-General of the State concerned, and a notification that such remittance has been made may be stamped on each packet.

Notes on the New Zealand Tariff Act, 1907, and the Preferential and Reciprocal Trade Act, 1903.

The following sections of these Acts should be noted by British Exporters :—

12.—(2) When any duty has been paid under the authority of any resolution of the House of Representatives passed on or after July 16th, 1907, and before the passing of this Act, in excess of the duty payable under this Act, the Collector may allow a refund of such excess, if he is satisfied that the goods on which such duty has been paid are still in the possession of the person who paid the same.

6.—(1) With respect to all articles mentioned in the Schedule hereto the full duty under this Act shall be levied, collected and paid, as if they were not the produce or manufacture of any part of the British Dominions, unless there is produced to the Collector

an invoice of the goods having written or printed thereon a certificate signed by the sender or consignor, in such form as may be prescribed by the Minister of Customs, stating that the articles are *bonâ fide* the produce or manufacture of some part of the British Dominions named in the certificate. No such invoice shall relate to any goods other than those to which the certificate refers.

NOTE.—*It has since been decided that the certificate may be signed by the Agent, Representative or Attorney, who ships the goods at the Port of Export.*

(2) On the importation of any articles mentioned hereto, the importer or his agent, in addition to the particulars required by the principal Act to be given on the entry of dutiable goods, shall state to the best of his knowledge, information, and belief, the country of which such goods are the produce or manufacture, and shall satisfy the Collector, by declaration or otherwise, of the truth of such statement.

(3) If a Collector has reason to believe that any goods are not the produce or manufacture of the country stated on such entry, he may detain them for examination; and if, after due inquiry, he is satisfied that such statement was false the goods shall be forfeited and dealt with as directed by the principal Act in the case of forfeited goods.

(4) Every importer or agent of an importer who produces any invoice or certificate, or makes any such statement, knowing the same to be false in any particular, is liable to a penalty not exceeding one hundred pounds, or at the option of the Minister of Customs, to a penalty of treble the value of the goods specified in such invoice.

(5) In any proceeding arising under this Act the onus of proof that any goods are the produce or manufacture of any part of the British dominions shall be on the importer.

(7) The Governor may from time to time, by Order-in-Council gazetted, make regulations for carrying this Act into effect, and may impose fines for the breach of any such regulation not exceeding one hundred pounds, and in particular may prescribe the classes of goods which shall be deemed, for the purposes of this Act, to be the produce or manufacture of the British Dominions or of any specified country.

REGULATION.

Where such goods are imported in packages, such packages shall not contain any goods other than those specified in the invoice, and if any other goods are found in any such package they shall be forfeited. NOTE.—*Also decided that all goods of British origin may be invoiced and packed together, whether same come under the Act or not. Foreign goods, provided they are packed in separate boxes, may be enclosed in outer cases which also contain British goods.*

In every case where, pursuant to section eight of the said Act, the full duty under the said Act is payable on any goods owing to the non-production to the Collector of an invoice with the prescribed certificate written or printed thereon, and at the time of importation the importer alleges in writing, and the Collector has reason to believe, that such goods are *bonâ fide* the produce or

manufacture of some part of the British Dominions, and that such non-production is due to accident, the following provisions shall apply:—

- (a) The amount so paid may be held by the Collector at the port of importation on deposit pending the production of an invoice with the prescribed certificate written or printed thereon.
- (b) Such deposit shall be returned to the importer if the invoice, with certificate as aforesaid, is produced within six months from the date of payment of the deposit, but otherwise the same shall be applied as duty payable under the said Act.

Certificates required under Section 8 of the Preferential and Reciprocal Trade Act, 1903.

No. 1.

FORM OF CERTIFICATE prescribed to be written or printed on Invoices of all Articles, except Tea, for Entry under the Preferential Tariff of New Zealand, when made and signed by an Individual Exporter personally. Certificates of Origin.

I, [*Full name of exporter*], the exporter of the articles included in this invoice, have the means of knowing, and do hereby certify, that the said invoice, being from myself to [*Name of party or parties to whom articles invoiced*], and amounting to [*Insert in words at length total value of invoice*], is true and correct; that all the articles included in the said invoice are *bonâ fide* the produce or manufacture of one or more of the following countries, viz. [*Names of countries, being in every case part of the British Dominions*]; and that a substantial portion of the labour of one or more of such countries has entered into the production of every manufactured article included in the said invoice to the extent in each article of not less than one-fourth of the value of every such article in its present condition, ready for export to New Zealand.

(Signed)

Dated at _____, this _____ day of _____, 190 .

NOTE.—Exporters are carefully to observe the above instructions in *italics* when making their certificates on invoices.

No. 2.

FORM OF CERTIFICATE prescribed to be written or printed on Invoices of all Articles, except Tea, for Entry under the Preferential Tariff of New Zealand, when made and signed by a Person other than an Individual Exporter.

I, [*Full name of person signing certificate*], hereby certify that I am [*Insert the words "partner," "manager," "chief clerk," or "principal official," giving rank, as the case may be*], of [*Name and address of exporter or exporters*], the exporter(s) of the articles included in this invoice, and that I am duly authorised to make and sign this certificate on behalf of the said exporter(s).

I have the means of knowing, and I do hereby certify, that this invoice from the said [*Name of exporter or exporters*] to [*Name of*

party or parties to whom articles invoiced], amounting to [*Insert in words at length total value of invoice*], is true and correct; that all the articles included in the said invoices are *bonâ fide* the produce or manufacture of one or more of the following countries, viz. [*Names of countries, being in every case part of the British Dominions*]; and that a substantial portion of the labour of one or more of such countries has entered into the production of every manufactured article included in the said invoice to the extent in each article of not less than one-fourth of the value of every such article in its present condition ready for export to New Zealand.

(Signed)

Dated at _____, this _____ day of _____, 190 .

NOTE.—Exporters are carefully to observe the above instructions in *italics* when making their certificates on invoices.

Every Manufacturing Firm should join the MANUFACTURERS' ASSOCIATION OF GREAT BRITAIN.

Chief Offices: Queen Anne's Chambers, Westminster.

Telephone No. 5454 Westminster.

What the Association does for its Members.

Combines British Manufacturers in mutual interests, to preserve common rights, improve labour conditions, promote export trade, and encourage manufacturing industry.

LEGISLATION	. Closely watches all industrial measures under consideration and represents Manufacturers' views.
INDUSTRIAL COMMISSIONS	. Assists Royal and other Government Commissions, submitting evidence and suggesting witnesses.
LABOUR-	. Seeks to bring about closer relations between employers and employees.
COMPETITION	. Collects information regarding Competition in various Industries, and watches operations of Trusts, Cartels, &c.
TARIFFS	. Carefully watches construction of and alteration to Foreign and Colonial Tariffs, and makes representations where advisable.
TRANSPORT-	. Gives information concerning Railway and Shipping matters, and watches operations of Railway Organisations and Shipping Rings.
EXPORT TRADE-	. Furnishes information regarding possibilities of Foreign and Colonial Markets; assists in securing Agents, &c. Special Trade Commissioner has investigated Markets in South Africa, Australia, New Zealand and Canada.
PUBLICATIONS	. Members receive the "Magazine of Commerce" monthly, and other publications, including Special Trade Reports.

The Association has no concern with party politics, and Members incur no financial liability beyond the amounts of their subscriptions.

BEN. H. MORGAN, *Hon. Secretary.*

MEMBERSHIP APPLICATION FORM.

To THE SECRETARY, MANUFACTURERS' ASSOCIATION OF GREAT BRITAIN,
QUEEN ANNE'S CHAMBERS, WESTMINSTER, LONDON, S.W.

I
We shall be glad if you will enter *my*
our name as a Member of the MANUFACTURERS'

ASSOCIATION at a subscription of £5 5 0 per annum.

Name _____

Address _____

Goods Manufactured _____

Date _____ 190 .

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